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AMAZING STORIES

Science Fiction

Vol. 9 JUNE, 1934 No. 2

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Our Cover

depicts a scene from the story entitled "Subjugating the Earth," by Walter Kateley—Drawn by Morey

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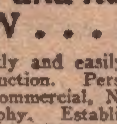

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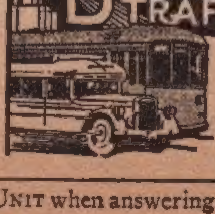

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AMAZING STORIES

THE MAGAZINE OF SCIENCE FICTION

VOLUME 9

June, 1934 No. 2

T. O'CONOR SLOANE, Ph.D., *Editor*

Editorial and General Offices: 222 West 39th Street, New York, N. Y.

Extravagant Fiction Today . . . . . Cold Fact Tomorrow

Old Time Problems in Mathematics

By T. O'CONOR SLOANE, Ph.D.

THERE are probably some people who would claim that it pleases them better to go up-stairs than to go down. However, this may be, it is certain that in the matter of numerical roots and powers, a child can go up, but in a sense it is virtually impossible in some cases to do the descending movement with final accuracy. Thus the square of two is four; its cube is eight and so on. If we want to extract the cube root of eight, it lies right before us, it is two. But as a variation on this, and as a simpler thing to do on its face, attack the extraction of the square root of eight. It will be found to have a decimal, part of it, reading 2.8284..... But this is only the beginning of it, for the decimal will be mercilessly long. The number two ought to be very simple, but if you try to extract its square root you will get another decimal without end. It starts off as 1.441402. . . . You may multiply this by itself, which multiplication will give its square, but it will not be exactly two because the decimal is incomplete. The same will apply to your efforts to get the square root of eight. Now if you will try to extract the cube root of two, you will again have a patience-trying problem and an endless decimal in the end.

There is in this last named extraction of the cube root of two a historical interest. One of the unsolved problems of old time mathematicians was to construct two perfect cubes, one of twice the volume of the other. This was one of the great unsolved problems of the ancient world. Its solution is absolutely simple if —and that is a big if—if we only knew any way of getting the cube

root of two. In the case of two solids of similar shape, if one is to be twice the volume of the other, then the length of similar corresponding parts must vary with the cube roots of these lengths. Thus if an edge of a cube has a length of one, the edge of a cube to be of eight times the volume must have for its edge a length expressed by the cube root of eight which is two, as we have seen above. This is simple enough. A cube one foot on an edge is only one-eighth the volume of one with an edge-length of two feet. But try to calculate the length of the edge of a cube, two cubic feet in volume. If you are comparing the volume of two spheres, you can use the diameter for your cubing, or your cube-rooting, as the case may be. Thus if a planet is of twice the diameter of another it will be of eight times the volume of the smaller one. If you have two vessels of corresponding shape, one twice as high and broad as the other, if the smaller one holds a pint, the larger one will hold a gallon. The larger a tin can is, the less tin will be required to hold a given amount. A number of small cans for the same contents would require more tin. If we go back to the days of Pythagoras or Archimedes and make our two cubes, the one of twice the volume of the smaller cube, will have an edge of a little over one and a quarter times (1.261 . . .) that of the smaller.

Another problem is to find the diameter of a sphere of the same volume as our original unit cube. The volume of a sphere is expressed as $4/3\,\pi r^3$. We have to find the value of r, which is the radius of the sphere, to give a value of one to the above expression. This operation is complicated by the fact that we do not know the exact value of π.

In old times, twenty centuries or more in the past, we find some examples of nudism, of which one applies to the determination of specific gravity. The great philosopher, Archimedes, was consulted by King Hieron of Syracuse as to the proportion of gold and silver in a crown which had been made for him and he was suspicious of the jeweler. We are told that as the philosopher was taking a bath he realized that he displaced water equal to the volume of his body. As gold is much heavier than silver for a given bulk, this gave him the clue to ascertain the proportions of the two metals by determining the specific gravity of the crown. He is said to have been so excited over his discovery, that he ran through the streets as he came from the bath, crying *Eureka, Eureka,* the Greek word for "I have found." He did not know of an action of alloys, shrinking or expanding, as the case may be, when their constituent metals are melted together. This determination by specific gravity of the percentage of metallic alloys of two constituents—is taught in science schools today as an approximate determination of their composition. It goes back to a period over 2,100 years ago.

To the same philosopher is attributed the burning of an attacking fleet by concentrating the sun's rays by a number of mirrors—bringing the sun's rays to a focus and setting the ships on fire. This impresses us as fiction or as merely tradition.

In ordinary or everyday usage there are three dimensions of space or of objects occupying it in any sense. The point may be taken as the origin of space of one dimension, which is the line. Next comes the plane which is of two dimensions and the solid which is of three dimensions. The succeeding fourth dimension is a mathematical expression in our practical world as imaginary as the square root of a negative quantity, $\sqrt{-a}$. It is quite enter-

taining to work out some relations of the different dimensions of space, and this includes the line, though it seem difficult to treat a line as space, for theoretically an infinite number of lines could be put into the "space" occupied by a single line. In other words, a line does not occupy space in the true and exact conception of things.

The relation of space of one or of two dimensions to space of three dimensions, while it may be called quite obvious, does lead to somewhat impressive results. Suppose we have a closed container or can of thin metal such as tin, so called in everyday usage though it is really iron coated with tin or some tin alloy. Assume it to be a cube twelve inches every way. Next suppose it is desirable to put its contents into smaller cans, say one inch each way. To make the large can six square feet of tin would be needed, which is simple enough yet somewhat impressive. It would require 1,728 of the smaller cans to hold the contents of the large can. The tin in each small can would be 1/24th of a square foot, so that it would require seventy-two square feet of tin to make the little cans—twelve times as much as for the large can, yet they would hold no more, their combined capacity would be the same—one cubic foot.

This is an example of the relations of spaces of different orders, and quite amusing results can be reached by carrying it out for different cases.

Everyone has noticed the extensive use of hurdles in country places. Suppose a sheepfold is ten hurdles long and one hurdle wide, and it has to be doubled in area. By adding twenty hurdles and making it twice as long or by adding only two hurdles and making it twice as wide, its area will be doubled. The two hurdle way is certainly the cheaper.

Obvious as this is, it is such problems as the above that are used in text books of calculus, for practice in maximum and minimum.

The *Pons Asinorum* (Bridge of Asses) is a term which has had an application in logic and in geometry, and our reference is to the last named science. It is the name given to the fifth proposition in the first book of Euclid, the famous geometer of twenty-two centuries ago. This proves that the basic angles of an isosceles triangle are equal, each to the other. The diagram is symmetrical and pointed at the top, which is the apex of the triangle, so that it actually suggests a truss for a bridge. The curious thing in connection with it is, that the term is often erroneously applied to the proposition of the square of the hypothenuse of a right angle triangle.

This proposition tells us that the sum of the squares of the sides of a right angle triangle of the lines adjacent to the right angle, are equal to the square of the hypothenuse—the other and longer side, the one opposite the right angle. The terms side and hypothenuse are taken as giving lengths.

We will assume a right angle triangle with sides 3 and 4 feet in length and of course any other units may be used other than feet. Then by the proposition cited the square of the hypothenuse will be equal to the sum of the squares of 3 and of 4. This sum (9 plus 16) is 25 the almost famous square of the hypothenuse. Its square root is 5 and this is its length. Now the numerical relation of the sides of a right angle triangle may be anything, but the law of the square of the hypothenuse will always hold. The reader may try to find for himself a relation of the sides that will work out without any fraction as 3, 4 and 5 do in our right angle triangle, the one we are working with.

This 3, 4 and 5 triangle has a very

practical use, a note on which will get us out of the perhaps dreary line of theory. Suppose masons are laying out the corner of a square building. The first thing to do is to measure off on one side a length of some multiple of 3 or of 4. Suppose 4 is taken and six times four feet, which is 24 feet, are measured off on one side from the corner. Then taking an 18 foot line, which is six times three feet, one end is attached to the corner, where we may suppose a heavy nail is driven. This line is stretched out and swung back and forth until a position is found in which its free end shall be exactly 30 feet or six times five feet measured from the distant end of the 24 foot line. This will give a perfect angle of 90 degrees on which to start the foundation.

We know that for some reason, people want to live in square cornered houses.

The numbers 3, 4 and 5 can be most usefully applied in many such cases as the above. But let the reader try and find three other integral numbers, numbers without fractions, the sum of the squares of two of them equalling the square of the third.

If we nail three pieces of wood together so as to form a triangle, whose lengths are in the ratio of 3, 4 and 5, it will give us a perfect right angle square, to use on our building.

In the problems of cubes the simplest is the most difficult to solve. It will always involve a fraction in the cube root of two, which would give the side of the cube of double the volume of the original one. It would be as endless a decimal as appears in the ratio of the diameter to the circumference of the circle. Any amount of puzzled brains have worked on such problems as these.

The history of the squaring of the circle, which is the determination of the relation of diameter to circumference, starts with the value, 3, for the factor to give the circumference when it multiplies the diameter. This is absurdly inaccurate. It is a little better to use the factor $3\,{}^{1}/_{7}$, which comes somewhere near the mark. But working on the calculation to get a decimal expression, such as 3.1416 . . . endless weary hours have been spent. The decimal has been carried out to some three hundred figures, enough to fill a column of this magazine. It is designated by the Greek letter π (pi). The number given above involves an error of less than one thirty-thousandth, and two or three more figures make it accurate for nearly all terrestrial requirements.

Sometimes instead of the famous multiple, π, a proportion is used. One such ratio is named from a mathematician, Meteus. It is expressed as 113 to 355, the ratio of diameter to circumference. This is very close to the mark. Applied to a circle one hundred feet in diameter, the error is less than the twelfth of an inch.

If π is carried out to eleven figures, 3 followed by a decimal of ten figures, it would bring out the circumference of the earth with an error of less than the twenty-fourth of an inch. But we do not know the diameter near enough to obtain so near an approach to the circumference.

The Lost City

By MILTON R. PERIL

Part II

Illustrated by MOREY

Our hero is now in the traditional land of Atlantis; an old, old story of ancient days opens for us in the second installment of this narration. The interest of the story rises after the introduction, as we may call it of the first chapters. We are sure that it will hold our readers' attention and prepare them for the interesting finale which will appear in the third and last installment.

WHAT HAS GONE BEFORE:

EL KASR was one of those ancient spots on the face of the earth which always held Sir John Mansfield, greatest living archæologist and Egyptologist, spellbound.

A native, Horda, who had worked with Sir John in the Libyan desert excavations five years previous, meets him and begs money for whisky for his white derelict master in exchange for a very old manuscript which he claims is genuine. In his room, Mansfield carefully studies the hieroglyphics and, after submitting the manuscript to every known test, is certain the document is genuine. It was written about 2800-2700 B. C. and by no other person than the great Egyptian king, Cheops, himself. After hours of study, Mansfield has the following data: Beneath the giant statue of a reposing body of an animal with a human head is the only entrance to Atlantis. With the further instructions in the manuscript indelibly printed on his mind, Sir John starts out for the great sphinx. After many disheartening attempts to find an elusive spring given in the record, and governing the opening of the secret panel, he disgustedly smashes the supposed spot and the panel slowly opens. He dashes into the opening just as the panel starts to close, without realizing his sealed fate. Once inside, however, his torch beam falls upon the inscribed walls and he forgets everything else. The stones are covered with the history of Egypt up to the time of Cheops. The need of fresh air and of water leads Sir John down a dark passage which ends abruptly in a hole ten feet square, almost sending him into the pit. Following instructions inscribed on the wall, he plunges his knife blade into a slit in the wall and the void becomes completely closed up. Standing on the platform, Sir John pulls the blade from the wall and immediately the stage drops at a terrific speed, throwing him to the floor and knocking him unconscious.

Some time later, Sir John opens his eyes and Yuxa, High Priest of the Whites of Atlantis, speaks to him in the ancient Egyptian tongue and explains all that has happened to the people of Atlantis and also how they had followed Sir John's movements from the time he entered the Sphinx. Yuxa's daughter, Venia, is also present. After being fed and somewhat rested, Sir John is taken to the Council chambers, where he tells the people of Atlantis about the civilization on the surface of the earth. In the middle of the talk a voice is heard saying, "The Blacks have arisen." The Blacks are the slaves of the white people of Atlantis. The battle that ensues is a very peculiar one, being fought entirely with paralyzing rays, as far as the Whites are concerned, but the Blacks use clubs and knives. The science of surgery has progressed in Atlantis far in advance of anything known on the surface of the earth, so wounds are easily healed. The Blacks are finally subdued, and the Whites who have been fatally wounded, in Sir John's opinion, are treated with rays and are soon walking around again as if nothing had happened to them. And then things begin to happen.

CHAPTER IX

Venia Gone!

DOWN the aisle sped the tall figure of Kodro, his arms gesticulating wildly.

"Venia! Venia has been taken!"

Yuxa stood stock-still at the announcement, his face masked.

"What are you talking about, man?" he demanded harshly.

"The blacks!" cried the young man. "The outpost has just reported that a group of blacks have crossed the man-eating line with a girl. It was Venia. How she was captured they can't tell."

The news was startling. Mansfield felt a tremor pass through his body. Venia taken by those bestial creatures!

Mansfield released him and he flew over the brink and crushed head-first into the oblique descent, striking the edge of the circular pit.

The thought was horrifying. Such a young and refreshing body in the clutches of a horde of brutes was enough to make the man shudder! He remembered distinctly now that the girl hadn't been in view at the finish of the battle between the two bodies of men. The observation had clicked in his brain at the time; now it took on alarming proportions. Sometime during the hectic mélée she had either gone from the room and had been seized by the blacks, or else a black had stolen up into the temple and had carried her off from under their very eyes. The former seemed more probable, though. He glanced at the high priest.

Yuxa was uncontrollable. Seldom had Mansfield seen any man like this. A virulent display of emotion that seemed to rise deep from within him drained his ashy countenance.

"Drop everything," ordered the high priest with a snap. "She must be saved from the wretches."

HIS voice faltered. But the men were on their way already. Mansfield hustled out with them. Surely, it seemed to him, there was a purpose in capturing the girl. Taking her life, in compensation for the number of their own who were done away with, didn't sound plausible, even though revenge was highly dominant in the black mind. It was more likely, he thought, she would be kept as a hostage. She was the daughter of the high priest. And they had made a specific effort to get only her. There would have been little trouble, compared to getting into the temple and capturing Venia, to have secured other white women; but, no, they had gone after the beautiful blonde-haired girl.

"The outpost," stated Kodro in anguish, "says that a large number of blacks covered the girl as they carried her across. Many of them were killed, but they succeeded in getting her through. Our men couldn't break into their defense."

Naturally, all work was disrupted. Yuxa kept his thoughts now to himself. It might have been that he was fearful of trusting his voice out loud. And Mansfield readily read him. He possessed an intense devotion for his offspring. His eyes tried to keep out that hideous expression of horror — what might happen to his daughter!

And Mansfield found that those shudders which were prickling his back and "needling" the base of his brain held him in an awful grasp. He found himself issuing into prayer: "God! Let nothing happen to the poor girl! . . ."

Already the news had spread throughout the city and preparations were being hastily made. Scores and scores of men were pouring out into the open streets and thoroughfares. Yuxa leaped amongt them, raising his hand.

"My brothers, this has reached the climax! The men of Atlantis have tolerated the black race since the beginning of time. We have stood for their periodical displays, overlooking their brutal natures, even trying to make respectable men out of them. They are coarsely ungrateful! Now . . . This is the time they shall suffer. From this moment on they shall all be rounded up and subjected to the brain dissection! If they resist, kill!"

He hadn't spoken or mentioned Venia's name. He didn't have to. Mansfield saw how the capture of the girl had upset all of them. To them, the daughter of the high priest was as sacred as her sire.

One man exclaimed: "An entire chamber of cylinders has been looted. A group of blacks overpowered the guards during the main fight and made off with them. It will be no easy matter. They

will fight beyond the man-eating line——"

Yuxa's eyes were electric sparks. "We shall cross! Every white man will lay down his life to wipe out the black evil!"

It was now that Mansfield received his initiation into their efficiency. Into units they divided, nothing like the untidy mass of men who had met the oncoming blacks. Each unit had as its head either a priest or man of science, the latter distinguished by a sparkling metallic tiara around the head. It was decided that the men were to proceed to the man-eating wall; there the rays which were centered upon the malignant grayish matter were to be shut off in one place; a unit armed with hand cylinders would drive the seething stuff into the main stretch and the overhead rays would be thrown back on again. In that manner it would be able to make a wide channel in the grayish matter through which the men could pour.

Mansfield was next to Yuxa, at the head of the main body of men, as the wall of demarcation was reached. Up ahead, there could be seen already at work the unit with the rays. In both directions, as far as the eye could reach, extended the colorful emanation which guarded the man-eating matter. It was a beautiful creamy blue.

The unit cleared a large hole directly through the center and the men rushed through, into an open plain. Far ahead was the lighted outline of the habitat which harbored the blacks. But no force of men was at hand to meet them!

The Englishman thought it strange, this progress without onslaught. If the blacks had taken pains to secure the daughter of the high priest, they surely would have maintained a strong stand in keeping her with them. But no rush of blacks was evident which would show a dark body of men! Onward poured the whites.

THEY were soon on the outskirts of the village and Yuxa, with foresight, distributed his men accordingly. They were to surround the entire place, and give no quarter. Venia must be secured even if every man had to stake his life. And not a black must be permitted to escape. All must be taken.

But if there was a battle, it was decidedly one-sided. For the white men of Atlantis circled the entire black place, swooped down upon the buildings, pouring through the arched portals, and not one black man was evident! There was nobody there!

They poked through every interior for hours without finding a trace of them, and their amazement knew no bounds. Yuxa was in a frenzy. It was now beginning to dawn upon the white men that the black race had been even more insidious than they had appeared. But there was no other place they could have gone. The large number of them could absolutely not have gone anywhere without the whites being aware of it, yet the paradoxical fact remained squarely to oppose them.

THEY were scattered all over the place, forcing prying eyes into anything that looked suspicious. Sir John Mansfield found himself a lone hand in this affair, prodding his nose in and out of the dwellings. They were rather fine stone buildings, worthy of a better mind and more stable temperament, he thought. The walls were tapestried with fine cloth drawings and designs, the furniture was finely wrought of metal. The doors, however, were simple in construction, not similar to the walls in the temple. It was comparatively easy to go from room to room.

It was strange. The colony couldn't

have transported itself into thin air. The blacks must be around here somewhere. Mansfield wondered. Could they have forseen this invasion and have countermoved into the city of Atlantis at the same time the whites were going through the man-eating wall? It hardly seemed probable. There were too many men about the temple; some word would have come to them had that happened.

He found himself in a cellar which was littered with refuse. Carefully, he moved around, inspecting the odds and ends which were heaped there. In one corner the wall was almost obscured from sight by a pile of trash. Detaching piece by piece he placed them in the middle of the room. Maybe there was some reason for all this maze! But when he had finally got a look at the filthy wall, the slimy stone told him he had failed.

It was arduous work, this tugging and toting of the broken and misshapen articles. His clothes were bedaubed with dirt, and torn, and somewhat weary he moved one of the broken chairs closer, braced it against the wall and sat down. His cylinder which he had used more as an illuminating projector than a weapon, was flashed around the basement.

It was a wide and deep cellar. The upper floor rested squarely upon a stone foundation, without any support in the center. Well-built. And suddenly he leaped from his chair with a cry, as his light played upon a tatter of a garment against the wall nearby! In one bound he reached it and snatched it up.

IT was a clean piece of cloth which had no place in this grimy interior. He'd swear he had seen the design somewhere recently! Certainly he had! He remembered it distinctly now. Coming out of his unconscious state in the upper chambers of the temple, just after entering Atlantis, his eyes had fallen upon the garment which clothed a body seated near him. This tatter was a piece torn from the robe of Venia!

This knowledge galvanized him. Venia had passed this way! She had struggled and had parted with this. Down into the bedraggled place she had been brought!

Mansfield stood firmly on his feet, poised for something he knew not what. It seemed to him that this remnant forecast imminent danger. It had some relation to the problem of the disappearing blacks, that he was sure. And it meant that somewhere near was the girl! Venia was nearby. He must not fail her; he must be cautious!

He, first, must find out whether these walls were false or not, whether the littered cellar was only a blind to conceal some hidden means of exit. Quickly he went around the walls and knocked on the blocks of stone for a hollow sound. His thoughts were in a furor. Had the daughter of the high priest been done away with? This piece of the robe spoke for itself. There had been a struggle. And a struggle, a resistance, brought to Mansfield's shuddering mind any possibility. Those creatures might have taken their vengeance out on her and have killed her!

For a moment he debated the idea of hastening up and bringing to light this discovery. The whites could wreck this cellar in a short time and find out whether there was a hidden spot about. But time would be lost. That wouldn't do. While he was hurrying upward, anything might happen to the girl. And Mansfield kept telling himself that Venia was yet alive, that she couldn't have been slain!

He tapped with fierce energy. But a solid echo kept ringing in his ears! It ridiculed his haste! But he couldn't

give up—he couldn't! He was ready to lay his life down that this theory of a rag was right; that everything lay right here! His eager knife swept swiftly through cracks and cracks. Maybe a slab would come loose! Working frantically, of a sudden he felt his spine shiver with an iciness that almost coagulated his blood, brought cessation to his respiration. A voice was behind him!

"Ha! What fortune brings us the stranger to Atlantis!"

He whirled, throwing his light around but he didn't need it. A huge negro, bare of clothing but for a filthy girdle of cloth, stood leering at him through crooked, yellow teeth. His beastly scowl accentuated his abnormal nose and mouth, his body glistened with a sheen from the small light he was holding focussed upon the Englishman.

AND then Mansfield saw the opening in the wall behind the fellow. It yawned blackly in a steep descent. And it was right near the spot where he had picked up the torn cloth! What a fool he had been not to search there first!

With a cry that rumbled from his larynx, Mansfield leaped. Running through his mind was his own condemnation for not getting assistance when he had had time. For now, coming out of the hole was another and another huge black! They carried clubs that would have frightened away a behemoth! The odds were tremendously against him.

Mansfield struck the foremost black squarely and, together they crashed to the floor. In a moment legs and arms were thrashing the air as the other two blacks were cast into the fight. The scientist's blood was gushing through him at a high pressure, racing with a madness that forced three blows where ordinarily he would have struck one. He laced out with his boot once and succeeded in dislodging a face which had its slashing fangs in his calf. These men fought like carnivorous beasts! His fists crunched venomously again and again upon abhorrent visages that grunted, and he saw blood and blood! He was covered with the red stuff.

A ferocious blow caught him fairly in the mouth and he went berserk. He sprang on the fellow nearest him and wrapped his long arms about his neck and choked him. Another blow struck him glancingly on the side of the head and numbed his hold, throwing him back against the wall.

It was a moment's respite, and he gasped for breath, surveying through misty eyes the situation. One black was on the ground moaning. That must have been the fellow he had kicked heavily in the face! But the other two, battered and bruised, were slowly creeping upon him, eyeing him through slitty orbs. Mansfield took a deep breath. There was no way out of this now. He'd have to yell with all his might to get the whites to know he was in trouble!

But he never opened his mouth. The two blacks made swift disconcerting moves, and one of them let fly the club! It caught Mansfield right under the ear. He was felled like a poled ox—a total blackness suffusing his consciousness!

CHAPTER X

The Circular Pit

FOR all of Sir John Mansfield's years of experience in the delving in archaeological information concerning races and peoples who had existed down through the ages, the vast profundity of knowledge attained didn't equal one whit the experience he was now gathering in the very midst of a historical, supposedly legendary people.

So he couldn't help but thinking now, lolling on the ground, trying to assuage that terrific ache which sprang from his almost split head. Where he was he didn't know. But a good two hours before he had roused himself from his stupor and had found that he was in this intensely dark place. He made no effort to rise, but lay back and fell into intermittent meditation, for all the throbbing, pounding head.

Things certainly had happened since his arrival, he told himself. There was no denying the fact that he had seen plenty in his short presence in Atlantis, enough that would enable him to bring to a kaleidoscopic clearness the intimate mannerisms which existed here. He had informative values at hand, which would cause a revision of ancient historial civilization. And think of those brilliant things, the brain dissection process, the multifarious number of rays! And that man-eating animal matter! A substance like that, in the possession of a great power, would practically mean absolute dominance. Let loose a quantity of the parasitic organism in any one country and that nation with its people was doomed!

Yes, this rotating earth certainly did contain miracles, mysteries, which the human eye was too blind to size up. Just imagine one of the wonders of the world, the Great Sphinx, standing as it had for untold centuries over a desert plain, unknown as to purpose, unexploited as to intention. Why, billions of eyes had gazed speculatively upon the massive edifice down through time and had simply conjectured it as a whim of a long-dead ruler of a mighty Egyptian people. Little had they thought that it stood ready to be utilized, ready to display its hidden wares, and only for the taking. But no one had seen!

A great god that was designed for Silence. It didn't speak—couldn't speak. But how well it replied in silent language once its meaning was established. During the forty to fifty centuries, but two men had fallen heir to the means of entrance—had found that such a thing did exist—he and that long-rotted carcass which lay doubled up and shapeless at the foot of the massive slab in the stone passage. And now——

GRADUALLY he came out of this revery. He became more and more rational. Presently his musings were gone and he found that his splitting head was resounding to the predicament he was in. The blacks, with their uncanny hatred, had created this safety rendezvous, of which the whites knew nothing. They must have foreseen such a time as this.

It grew upon the scientist's mind that their occasional attacks had not been, as the high priest had believed, aimless essays. They had probably tried time and again to get the daughter of Yuxa. Now they felt that they held the upper hand, something with which to formulate a plea for themselves. There wasn't a white man who wouldn't give his life to save the girl.

He rose groggily and steadied himself against the wall. Still he could see nothing. It was a Stygian blackness which enveloped him. He stumbled, hugging the wall closely, fumbling along it. He wondered what sort of room he was in. Perhaps there was some means of escape from it.

His hand, dragging back and forth, fell across his hip and he let out a burst of surprised relief. His gun was still in its holster, together with the cartridges! What luck! The black captors had not taken them from him. They had not, apparently, understood their importance, known their real value. Those animal-featured creatures would, of course, not understand anything oth-

er than a ray cylinder, a club, or a knife. They had paid no attention to his gun! What fortune!

It was an elation that in itself almost healed the palpitating head. The presence of his revolver meant to him more than anything else right now. He could stand off a whole regiment of blacks, given a point of vantage. His blood tore through his veins and arteries with shrieking hope, with fired purpose. If only he could find some way of getting out of here, the better were his chances for rescuing the girl. He must get out!

Venia must be gotten from their clutches. He felt sure now that she still lived. Hadn't they taken pains not to do away with him? Their only hope in saving their own skins was to play a tactful hand, and that they seemed to be doing.

He must have progressed with his back to the wall for about fifty feet when the darkness suddenly gave way to an illumination which threw the entire place into relief. He found himself in a large chamber with a low ceiling. But what brought his lips to a pursing whistle was the sight that met his eye. His feet rested upon a narrow ledge about three feet wide which ran away from the wall, then dropped slopingly to the very center of the room, where there loomed up a circular hole about ten feet in diameter!

HOW fortunate he was! Had he started to prowl about before, he would have undoubtedly stepped off the rim of the ledge and skidded downward to that round pit which took on a more terrifying aspect the longer he looked at it. It was a sure means of self-destruction.

His head was in a daze. His theory was all shattered. They didn't care whether he lived or not! Had he slipped here he would now probably have been a dead man. Good Lord! He hoped Venia hadn't been thrown into this place!

His eyes met the blank stare of bare walls. There seemed to be no opening from this chamber. He stared long at that circular pit below him, pondering the idea of letting himself down from the ledge and finding out where the hole led. The more he gazed around at the unending walls, the more attractive loomed the possibility that the hole might take him somewhere. If he were careful and cautious, he could be sure of his footing.

He dropped over the flat rim and wriggled down slowly. His hands and feet moved with infinite precision. There was a moment when he thought that his body was going to fly from under him, but his wet and perspiring hands clamped down on the cold stone and nipped the momentum.

At the edge of the circular pit he dug his hobnailed boots into the stone, setting himself, and looked down. An awful cry went from him as his eyes gazed at the unbelievable thing down there! That hole was a receptable for the grayish man-eating matter! Once one had seen that bubbling animal substance, the eye would never forget it. And the bluish iridescent ray hovered over it, keeping it in check!

Great Heavens! He must get away quickly, back upon the ledge. Every moment he tottered on this edge might mean doom for him! What a fool he had been to take this horrible chance! Had he known what lay there nothing under the sun could have made him slide down to it so lambently!

His fingers grasped the stone till they bled, and he started to crawl back up. This was nothing like the untroubled descent but a moment before. The very thought of his narrow escape from a hideous death made his upward pro-

gress all the more severe. It was a deep relief when his tensed fingers touched the top of the ledge and he drew himself upon it. His body was shaking.

FEEBLY he dropped in a crevice next to the wall and exhaled horrible thoughts. The picture of those blacks being fed to the matter rose up before him in virulent waves. It wasn't a cherished end, any way one would look at it. That unearthly stuff took you and kept your passing a secret in its fiendish heart.

He shrunk against the wall, thankful for its protection. His hand fell over the butt of his gun and caressed it. Just give him one good break! Let him get possession of Venia! And by thunder he would fill every attacking black with bullets! His mouth fastened into a grim line. All he wanted was just one crack at those fiends. That he had been thrown into such an awful place was making him decidedly angry. The sight of the man-eating stuff had turned his fairness and tolerance to one side. His fingers itched to get around the throat of a black.

He was lying thus crouched when from the corner of his eye he saw a section of the wall just overhead slide upward and a leering countenance show itself. The black fellow was looking in to see whether the prisoner had fallen into the pit. A huge mouth opened into the semblance of a grin as he stared at the grisly pit.

Spontaneously, Mansfield saw that Fate had opened its hand to his unuttered plea. Here was his opportunity! The black didn't see him because he lay directly beneath him. But if the fellow decided to glance below, it would be a simple matter to glimpse him. The gloating face, however, seemed content to think that he had slid into the grayish death.

With a leap, Mansfield was out of his crouched position, and he timed his outstretched hands beautifully. The wiry fingers enveloped the black throat before the other knew what happened. A terrific jerk, and the scientist had pulled him through the opening.

It was a delightful feeling, this yielding neck in his hands. There was a terrified look on the black face; it tried to bite itself loose from the steely muscles which was clamping out life. His vocal muscles were paralyzed; he couldn't cry out. The voice never was heard again! Mansfield released him and he flew over the brink and crashed head-first into oblique descent, striking the edge of the circular pit, bounding directly across it to smash into the opposite side, then dropped from view into that hungry mass below.

The Englishman tottered on the ledge from the exertion. It had carried him away from the wall, near the edge. With a supreme effort he threw himself upward and clutched the opened panel. It saved him instantly. He clung to it, breathing spasmodically; then, with feline agility, he leaped through it and was in the other room.

It was an elaborate interior, with many seats and lounges; and fortunately it was empty. He had to work fast, though. In one motion he closed up the panel and surveyed minutely the room.

THERE came to his hearing the sound of voices and like a flash he dropped behind one of the large, bedecked chairs. From a narrow slit between the rungs he saw a cloth being pushed aside and two blacks entered.

They glanced about questioningly. One them said,

"Where is Mantsi? He was supposed to be here."

The other strolled over to the panel and flung it open. "Look! The prisoner

has fallen into the pit! He is not there!"

"Good! He is one less white to contend with!"

"Mantsi must have gone up to report it to Okrulla; Ha! Ha!"

Both fell into a laughing cackle which brought utter disgust to the concealed man. They were no more than beasts in emotional expression. Mansfield could see them sit down upon a lounge. Their widespread nostrils contracted with each steamy breath; their greenish orbs were slits that moved around unceasingly with horrifying effect.

But the Englishman was tensed. His hand was on his gun, eyeing every move. Not now did he intend that he should be taken a prisoner again without retaliation. His fears were unfounded, however; one of them rose to his feet and leered:

"We hold the upper hand now. Okrulla will make those white devils come to us. He has the girl!" Both burst into a loathesome sputter. "They think they'll get her when Okrulla demands complete freedom for us. Ha, ha! We shall mow them down when they least know it. The girl will be Okrulla's. And we'll all have the choice pick of the rest!"

Mansfield fought hard to keep his laboring breath from giving him away. How he longed to throw himself into the open and send slugs into their rotten bodies! But he couldn't do that. He must use discretion. Freedom was a thing to him now when he had boundless duties resting upon his head. What he had heard from these two evil lips forebode a terrible disaster. He felt that the white would assume the old régime, once more, if they would be able to get the daughter of the high priest back again.

And he, Mansfield, was the only white man who knew of all! It behooved him to move with sanity, with caution.

The standing black moved toward the door. "You stay here, Katka. I shall go over and see what the girl is doing. When Mantsi returns, you can leave."

And with another of those demonaical laughs he quit the room. The remaining black rose from the lounge and moved around. Presently he strode to the panel and glared through it. Another cackle dropped from him. He seated himself upon the chair, behind which crouched Mansfield.

It was now or never! The scientist gathered his energy for one swift blow. Silently he removed his gun and held it by the barrel. He sprang up and swung with all his might at the black head which was turning startlingly; the force almost tore the weapon from his hands. The fellow stiffened, sank forward.

With a frenzied speed he raised the heavy body and dragged it to the open panel. A heave, and he saw the figure bound out upon the slope, skid crazily downward and out over the pit, dropping from sight. Another one dealt with!

He rushed toward the opening of the draped cloth and peered out. An inward rush of gladness rose within him. Proceeding along the long corridor was the black who had said he was going to where Venia was! Mansfield could follow him straight there!

CHAPTER XI

The Torture Chamber

QUICKLY, cautiously, he padded after the fellow. The black was swinging along in care-free fashion, utterly scornful of everything but of his own importance. And Mansfield gave no cause for him to feel that someone was following. He hugged the

walls like a dark shadow flitting in long noiseless strides when he had the opportunity, gliding along step by step when the other slowed.

The corridor was a very long one, sinuous and narrow. At one time the black came abreast of a portal and gazed into it, looking absently backward, but the Englishman was a silent posing figure which blended perfectly with the surroundings.

Sir John Mansfield was glad of one thing. He knew where the pit chamber was situated. It struck him that he, alone, could withstand any number of assailants there with his gun. It was an excellent stand. He could pick them off one by one as they came through. Could pitch them into the gray matter.

The black stopped before a door and glided in. Mansfield followed carefully, pressed against the wall. Now was the time to proceed with caution. In all probability that was where Venia was. He couldn't jumble the whole thing at this momentous instant. He must not let his chance slide through his fingers.

His hand came in contact with a sharp turn in the wall and he squirmed silently around it. A dark cloth shrouded what he presumed to be the door. With imperceptible precision he drew it aside. A thin beam of light greeted him.

The room was empty, and was in appearance similar to the one he had left. In a moment he had slipped through, standing statuesque, keen eyes flitting around. He heard loud voices and dropped like a plummet behind a divan.

The cloth at the other end of the room swished back and the black he had been following emerged in the company of another. They moved toward the center, talking.

"Give her another hour in there. Make her suffer!"

"As you say!" He nodded.

"Good! Then she will be taken to Okrulla!" Again he heard that name.

They laughed gleefully. With a farewell gesture one went to the entrance and departed. The other chuckled to himself, flexed his arms and went into the next room.

MANSFIELD waited for a few moments. It was clear to him that Venia was in the next room. Now was the time to collect himself. He rose from behind his concealment with a trembling heart. The girl was undergoing torture. That much he gleaned from their conversation. And the thought of the girl undergoing forced hardship fired his brain.

He sprang from his cover and snatched the weapon from its holster. In a twinkling he had torn aside the covering of the portal.

It was a two-by-four construction, completely paneled in a transparent matter which gave insight into a large room beyond. Mansfield halted, watching the black who was applying his strength on a lever of some sort. The fellow pulled the thing back; at the move there issued from a large pipe in the ceiling a hissing sound, like escaping compressed air.

And then he saw Venia. She had been thrown into the air from her crouched position on the floor, and the same unseen force grasped her and hurled her against the wall. Her eyes were staring widely, hair disheveled, but her lips were pressed tightly together. She was resisting this torture without a moan.

It was some sort of vacuum chamber. There were round holes in the wall at regular intervals, and as the black threw back the lever something forced all the air out of the room. The rushing force picked up everything within and slammed them viciously against the walls.

The sight of the daughter of the high priest being knocked about so viciously

brought a fierce expression to Mansfield's eyes. He yelled once, indiscreetly, causing the black to whirl around. The dusky fellow sprang upon him with a curse, but fell backward as a bullet crashed into him.

The Englishman's first act was to release the lever and let the girl slump from her forced posture against the wall. He knew now that the shot might have been heard. It would have reverberated clear down the corridor. He must work with celerity.

Like a trapped animal in a burning cage, he sped around and around trying to find some means of opening the glass panel. But he could find nothing! He knocked violently against the glass, pressed his face in it, waving frantically.

His movements were seen immediately. The girl rose to her feet and stared amazedly at him. She fumbled toward him but her last bit of strength had gone, and with a movement of the mouth she sank once more upon the ground.

There came to Mansfield's ears the sound of slapping feet and he hurried to lug the body of the black back into the first room, where he tossed him under a lounge. Anything that would delay the blacks from finding out what had happened. His mind was on one thing now. He couldn't save Venia at the moment. He must take care of himself.

One good thing, though. Venia had seen him. That meant a lot. She would know that he was around to protect her. It would give her a rejuvenation of spirit to keep on fighting, knowing that someone was at hand to come to her aid.

HE dived behind a chair just as two blacks came bounding into the room, staring wildly for the explanation of that sudden noise. Mansfield saw both distinctly. He laughed to himself as he saw the two come out of the torture chamber with astonished faces. They looked at each other for a moment, then returned to stare once more into the transparent wall.

Mansfield glided out like a ghostly being, breathing a sigh of relief when once again in the corridor. But a glance told him that he must not tarry. From the other end of the passage were running more blacks. He might be able to make his way to the pit room, if he were careful.

In the shadows he moved. He thanked the guiding hand, which watched over him, that at that moment no black men were coming toward him from the nearer end of the corridor. That would mean instant discovery. It was a break for him that the chamber of the man-eating matter was at the end of the long hallway.

In a flash he had sped across the corridor and into the chamber. But his slithering feet spoke volumes to the black who was napping in a chair. The fellow sprang to his feet, rubbing his bleary eyes! Surprise was all over him.

"Ghost of the gods! Where did——"

Sir John Mansfield's gun roared once and the other pitched over on his face. Almost before he had hit the ground the scientist had hoisted him upon his shoulder; and he hauled him to the panel and disposed of him.

He couldn't have helped firing, even though he knew the shot would be investigated immediately. The negro would have come out of his stupor at any moment and this wasn't a time he could afford to fight with a black. He would probably have struggled with him ineffectually until the others came; then it would have been all over. They would have thrown him into the circular chasm without another word. He was only a pestiferous thorn in the black

domain. He was not wanted then.

FEET pounded and, again, he concealed himself. A half dozen men came in with a rush, halting with utter consternation on their distorted faces. They looked through the open panel, turned in dismay.

"What is this strange noise which sounds through the walls?" one of them said. "And where is the guard?"

"We found nothing where the girl is. The guard is gone, too. I tell you, it is a sign of wrath from the gods! They look evilly upon our attitude to the whites!"

"Stop! Enough of your snivelling, Brexshu. Speak not of the diety in such tongue!" There was a snarl in his voice.

"I fear——"

Mansfield, while watching with abated breath, saw the infuriated face of the man, presumably the leader, go stark mad; saw him raise his ham-like fist and crush the other into insensibility with one blow. The fellow's knees buckled from under him and he stretched out. The other blacks stood around and gaped.

"No more do I hear such blasphemy! Understand? The gods are with us! Throw this rodent through the hole!"

Two blacks lifted the unconscious man as though he were a mere feather and flung himself out. Then the leader said:

"Two of you stay here. If that sharp noise occurs, find out what causes it. We are safe here. The girl is the only white in the hidden depths. And if those guards show their faces, pounce upon them and dispatch them as was done to Brexshu."

They nodded. Mansfield couldn't help but smile. Those guards were gone forever now! And these simple fellows! Not once had they instituted a search of the chambers. They were charged with the dogmatic belief that their creation of a hidden place was unapproachable, that nobody could get to them. Perhaps that might be true, but he, Mansfield, was loose. It didn't enter their minds to search for anybody. The only thing they understood was what they saw. They had seen him thrown into the pit. No one had ever gone out alive from it. Thus he was a dead man.

But Mansfield's heart beat very much in life as he slouched in back of the obstruction. And his grin was a thing which felt good to his tired and bruised body. That welt on the head still ached.

He let up his vigil not one iota, holding the gun firmly in his hand. The two blacks were pacing the room nervously, sitting down, getting up. If only these creatures had a little mental capacity, they might be an exceedingly dangerous foe. He shifted his position a trifle. The cramp in his leg sent a prickling sensation through it.

The next moment his exuberance burst into a groan of dismay as his foot caught in the leg of the chair and it skidded forward, revealing his crouching posture clearly!

CHAPTER XII

Masks of the Gods

THE nerves of the blacks were on edge, and the sudden scraping of the chair brought them to their feet. Their eyes fell upon the doubled-up figure of the man they had thought long dead, and they screamed hoarsely. Then their greenish eyes became infused with a fearful vengeance, and they sprang with arms outstretched, maniacally bent upon destruction.

The first impact of the three bodies knocked the gun from Mansfield's hand and he went down beneath the crushing

weight. Two arms, like whipcords, went around him and began to squeeze the air from his lungs.

He was stunned; his breath had left him in the fall. But it was this that saved him from those strong elastic arms which were trying to strangle him. His body became limp even though his mind was clearing. The black loosed his hold a trifle to get even a better one; Mansfield's knee came up with a sudden, vicious jerk. The black face betook a pastiness that made his ebon a sickly yellow, and he slumped backward and rolled over.

Gasping, snorting, Mansfield rolled out of the way of the black who dived for him. But the black fingers succeeded in getting a hold of his khaki shirt and they dug their nails into it, clear to the skin. In another moment the two were rolling over the floor, legs draping over each other, in a wild scrap. Fingers clawed red streaks into each others' faces in an endeavor to get a lasting grip.

The black presently got his thumb in Mansfield's eye and gouged. It was so harsh a pain that the scientist thought he was going mad. He sunk his teeth into that iron fist until the blood dribbled around his lips. His right hand cupped the disgusting face and shoved backward.

Never had he fought like this! It was life or death! The taste of that horribly salty blood upon his lips was abominably sickening. In his confused subconscious mind he was a carnivorous beast feasting on the life fluid of another beast! A power-suffusing gall crept over him.

The thumb was a piece of lacerated flesh and bone and it dropped, useless, from the eye of Mansfield. It had been chewed down to numbness. Slowly the crush of his ribs began to tell on him. In another moment they would give way to a snap. And then their writhing bodies crashed into a table—and it toppled over on them!

They were free once more. Mansfield sprang to his feet, his frantic eyes sweeping the room for the gun. It was lying right at his feet! He couldn't deceive himself now; he had very little strength left; his eye hurt him awfully; and the black before him rose with a vigor that manifested his reserve power! He dived for the gun and gripped it with an inspiring clutch. Lord! didn't it feel good within his palm!

JUST in time did he whirl. Both blacks were now upon their feet. Their faces were hardly human any more. The pupils of their eyes were pin-points of repulsiveness.

One of them had drawn a long slender blade from his dirty loin cloth and was advancing ominously; the other was still groggy from the knee-jam and groaning feebly, but he circled to get in an effective blow.

Mansfield felt a sag in his muscles. His bruised eye was burning him dreadfully. It couldn't last much longer. Both blacks leaped through the air.

His finger pulled back the trigger. The room reverberated to the crash; the black with the knife stopped in mid-air, the blade slipping from his fingers and clanking to the floor. The noise of the gun halted the other abruptly. He gaped with open mouth at the deed committed right before his eyes, glanced unbelievedly at his fellow black, who lay gasping his last. With a fiendish yell he sprang for the knife, grasped it. His arm drew back and flung the sharp point straight at the Englishman's breast, with a speed that made the shining metal quiver as it hurtled through space!

In the same split second Mansfield flung himself to one side and fired again. The black was knocked backward by the

thudding bullet and the knife whizzed by Mansfield, only slashing his shirt. He stood on the balls of his feet and rocked, regaining his breath. Without another glance at the fallen pair he whirled for the door and was out in the corridor.

There wasn't time to dispose of the bodies. He must get out of the place. Where, he didn't know. Twice the blacks had been puzzled by the loud report; twice they had blundered in the attempt to solve the mystery. But, now, the sight of the two prone, bleeding bodies would be associated with an existing fact, and they would scour the place for some reason until they found him. No—he wasn't safe at all; he must be doing something.

Across the corridor he saw a draped doorway, into which he plunged. Behind him sounded the rush of numerous feet. A glance ahead revealed the bottom steps of a flight of long winding stairs and he fled upward. His breath was laboring painfully.

HE bounded up and up, when he reached a turn. He halted for a short spell to get his breath. In the angle of the corner a cloth covered a small alcove. He spread it open to look at it—just as many voices and feet were to be heard coming up the stairs!

Quickly he threw himself into the narrow confinement. It held one person very uncomfortably, but it wasn't bodily convenience that he was looking for at the moment. Any pause would help and this afforded it. With swift deft fingers he rolled back the cloth cover and held it without a ripple. And to his ears there came loudly now the approaching mob, the puffing breath of many bodies, the harsh strident tones, the scrape of many sandals. Past him they bounded!

"There is something amiss here," a voice gasped as it went by. "The noise! And now here are two dead ones!"

"I tell you, the whites have something to do with this. One of them must have gotten through. Shujee saw someone flit out down there and make this way!"

So someone had seen him, had he? Well, that simply meant that they would be looking and searching for him until they found him. His trump card of being an unexpected enemy down here had vanished. He had to be wary now. Mansfield's stiffened figure moved not one flick, his rigid fingers trembled not as they kept the cover from uncovering his presence.

The last pair of feet had clumped by. He listened for more, but there were none. It wouldn't last long, he knew. This brief escape would soon be bringing them all back down this way just as soon as they had scoured the upper corridors and rooms. They would search every possible avenue. It was rash to remain here.

His hand reached behind him and palmed the wall, while his brow puckered up in thought. How well did he realize the oppressive odds which were against him! He didn't know his way around here; anything he might do would probably be just the wrong effort. The only thing he was sure of was that a fierce mob of men would swoop down upon him and tear him to shreds!

He pressed his hand against the wall with a determined eye. He was going to see it through! He'd give until his last bit of strength gave out!

And then he felt himself flying backward!

Something must have loosened behind him from the pressure of his hand. His surprised face looked behind him just in time to see a large slab of rock pivot quickly to one side. With nothing to support him at his back, he fell like a load of metal down that yawning open-

ing. It was a fall of only a half a dozen or so feet, but it stunned him completely for a minute.

His twisting head had crashed into some solid substance with a resounding smack, his body following in a quick accompaniment.

HIS brain cleared. He moved first one leg, then the other, testing for broken bones. His arm, which had crumpled beneath his body, moved out and shook itself. It truly was miraculous that he hadn't broken something in that short heavy fall.

He sat up and rubbed his head. That organ certainly had, of late, been the recipient of plenty. But the faithful old dependable still worked! His eyes were becoming accustomed to the dim light of the room. He glanced upward.

There was a short flight of steps leading down from the slab of stone through which he had fallen. The unexpectedness of the fall had caused them to abet rather than to hinder his sudden drop. It was a wonder he hadn't broken half his bones!

He laughed elatedly. Something really seemed to be taking care of him! It sent a warm feeling rushing through him. And he swept an eager eye around him.

The glance startled him. The walls of the room were arrayed in narrow compartments, and in each of the cell-like three-sided affairs there stared unblinkingly back at him the most hideous of faces! It was a sight that almost knocked him off his feet!

He crouched with gun in hand expectantly, waiting. But those frightful, cadaverous visages made no move toward him. Their horrid features were so repellant that Mansfield stood rooted like an inanimate statue. But he couldn't remain thus forever, so he crept closer to the first stall. His weapon was ready to fire and ready to kill.

A glance inside, and he burst into a laugh that peeled off the ghastly feeling which had covered him during the past few moments.

They weren't live things! Only mask-like effigies! He paced from cell to cell and satisfied himself on that point. Masks! But what forbidding depictions! They were enough to make the blood crawl within you, these uncanny, weird faces! From every neck there depended a long robe.

Mansfield understood now what they were. Gaudy displays of a high priest, which herded superstitious and susceptible blacks into submission. And he, Sir John Mansfield, had the fortunate experience of falling directly into this! He chuckled to himself.

There were dozens of the gruesome faces all around. Probably this chamber was entered only by the priest. With almost childish inquisitiveness he dropped one of them over his head and paraded around to acquire the feeling. Satisfaction dripped from him. Wait until he told this to some of his colleagues back in England! Here he was attired in the regal garment of a god! He could with a gesture decide the fate of mankind! Ha! Ha!

He bolted upright suddenly. A voice came to him faintly. In a bound he was back in the cell, standing up, still garbed in the robe with the ugly head. He was just in time!

The slab of stone through which he had fallen glided back and a black strode down the steps! From within the beastly mask Mansfield envisioned the most splendid specimen of a body he had ever seen. The negro was fully eight feet tall if he was an inch. His shoulders were like mountain tops charged with a beauteous, graceful ripple.

He walked directly to the cell in which Mansfield was concealed, gazed

preoccupiedly into it! There was a frown upon the black face.

"That noise!" he murmured audibly. "They think it is Ra! Fools! I must do something to steady them. They must realize that I, Okrulla, am endowed with the smile of the gods!"

He turned away from the stall and moved to another one, and Mansfield breathed a silent relief. He selected a fierce face abstractly, fixed the robe and head upon him, then departed through a door at the other end of the room, closing it noiselessly behind him.

SO that was Okrulla! What a creature! His countenance was instilled with hate, but it could be plainly seen that there was a reasoning power behind that skull. He wasn't like the rest of the race, with negligible forehead, prognathous jaw. That fellow radiated a fierce will and man power. He would be an uncomely foe to deal with!

Mansfield ran to the door through which he had gone and opened it surreptitiously. He saw a large hollow shell and it was empty. He crept into it and looked around. There sounded now the booming voice of Okrulla with distinctness. He was speaking.

"Men of the black race of Atlantis! The time has come for us to destroy the white devils and their power. I, Okrulla, son of the gods, upon whom I bestowed their smiling favors, have been chosen to lead you into the land of complete freedom. I wear now the sign of heaven; it was draped upon me by heavenly hands!"

Mansfield flashed a speculative eye about him, wondering from whence this came. The shell was the inside of something which he couldn't shape out. Then he struck it! It was the inside of an altar, and near by there stretched back the raised dais. The ceiling was just over his head. He stood on the platform and looked through the narrow illuminated slit. An exclamation hissed through his lips!

He was peering into a large chamber in which there were many blacks. And right next to him—only the thin wall separated them—was Okrulla, in all the fineries of priesthood! His hand was outstretched toward his people.

"No more shall there be bartering. That is over. We are to rule by the grace of the gods. Bring on the blood with which the mouth of Ra will taste our sincerity!"

Ceremonies and religious rites ensued. The entire gathering fell to their knees and knocked their foreheads against the cold stone and from their throats there rose fervent incoherent phrases. Some of the fanatics banged their heads with violence. It brought a grin to the face of the concealed man.

Something made Mansfield look at his gun, and it was a lucky thing. All of the chambers were full of empty shells; he quickly took them out and refilled the weapon with fresh cartridges.

And then, the towering, regalia-decked figure of Okrulla rose up. The ferocity of the hideous head was not lost upon his followers. They cowered on their benches, quavered at the least gesticulation of a movable ear, eye or tooth. Fierce fangs protruded from the mouth of the mask. The priest was truly displayed in majestic power at the moment, and the unruly subjects were like babes under his insidious eye.

"Bring forth the offering!"

FROM a doorway at the other end of the chamber there came into view two blacks, dragging someone between them. They must have been waiting there for the signal. It was a white person, Mansfield saw from the distance. And his muscles tensed at the sight of the form dragged over the floor.

The party reached the center of the stage, right before the altar upon which Okrulla stood. Sir John Mansfield's heart leaped into his throat, a quiver ran down his spine.

It was Venia!

CHAPTER XIII

A Heavenly Descent

THE girl had suffered much in the torture chamber. Her face was bruised and there were wounds on her legs and arms. She was totally spent, and the black guards were hauling her without concern.

Mansfield, rooted to the slit, saw her eyelids flutter, saw her eyes stare back at the great figure upon the dais. There issued no murmur or groan from her lips, but her blue eyes spoke volumes of utter loathing.

"Daughter of the high priest," rumbled the ferocious head, "your race is doomed by the gods! The black people have been chosen to lead!"

The girl drew herself up in scornful attitude, loosened herself from the clutches of the scowling blacks on either side, raised a defiant, tousled head. Still she said nothing.

Okrulla laughed creepily. "It is despoiling the beauty of Atlantis to offer you on the altar, but the gods want you!"

Venia's eyes flashed terror, but it died away just as quickly. The Englishman saw her breast rise and fall quickly as the realization was forced upon her. Her mouth became a grim line.

"Have you something to say?" the priest offered in a slimy voice.

Her head tossed back. "Your carcasses will be fed to the man-eating matter!" her soft voice declared.

"Ha!" roared the man. "She dares to defy the will of the gods! She dares! This offspring of an accursed people? Enough of your blasphemy! To the altar!"

Brawny arms lifted the fighting, struggling girl as though she were but a child and deposited her upon the silk-adorned shrine. Quickly experienced fingers strapped her heaving form securely to the flat-topped surface. Her agonized face was only a few feet away from him. Mansfield braced himself for action.

The guards fell back to the benches and the priest rose to pace the platform angrily. A vituperous stream of hatred he heaped upon the heads of the white men of Atlantis. He cursed them with a frenzied joy that made the headdress quiver. And the blacks glistened with the sight of a new-born power almost in their hands.

The girl was staring wildly at the gesturing Okrulla, when she became startled at the sound of a whispering voice at her very ear.

"Don't turn your head, Venia. Don't let them know that I am here."

THE girl closed her eyes in joyful assent. She had heard him plainly. There came upon her face now a beautiful expression. Her drawn countenance relaxed into a mockery that derided the fanatic speech of the black priest.

Okrulla turned and snatched a long poinard from his girdle beneath the robe. He began a slithering dance upon the dais, and presently the entire gathering was burst into song, an eerie, unmusical chant that pricked the nerves with horror. Their faces were not human any more; jowls were slavering for human blood, eyes were rolling to the avid accompaniment of twitching muscles.

Closer and closer came the dancing black. Closer came the upraised arm which grasped the pointed blade. Higher

and higher extended the closed fist. It was reaching to a great height, ready to plunge with a lightning streak that would bring the appeasement of desire. The priest was next to the girl with venom burning in the mask's orbs. The black voices died away in a whisper, waiting eagerly for the climax move of the ritual.

The point was directly over the girl's heart. She stared fascinatedly at it, without horror, without qualm.

"Ra! I bring you the cup bubbling with our humble offering!" And the arm began its swift descent!

The silence in the room was suddenly split by a terrific yell from a begarbed figure which had risen from apparently nowhere, and a resounding crack of a gun! The mouth of the priest opened in surprise, only to be the recipient of the chunk of metal that tore clean through his head. The sleek poniard dropped from his spasmodic fingers and fell upon the palpitating bosom of the girl, hilt downward. Okrula rolled over the dais and flopped sprawlingly upon the stone floor.

Right before their eyes a miracle had happened. The blacks were looking at a bulbous head of utter ugliness, at a body from which spat instant death!

It was Ra! Ra! Okrulla had sacrileged his mission upon the earth. The gods had not desired this!

"I am Ra! Bow down in repentance for your deeds!" said the booming voice.

They dropped prone on their faces, moaning in terror. Not a face dared to lift upward. Bodies groveled, seeking reprieve for their misdeeds, pleading in prayer for condonement.

Mansfield stood over the closed eyes of the girl and looked at her, touched her fair cheek. Her lids flickered. He bent closer, but the hideous garb didn't frighten her.

"Sir John!" Her voice almost broke.

"Good girl!" spoke the admiring voice of the rescuer. "You are a brave girl!"

Swiftly, he cut loose the bonds with the sharp blade. He swept the chamber, but the blacks were still groaning fitfully. His voice boomed out in harsher tones. Every head dug deeper.

"BLACK men of Atlantis! Harken! Ra speaks! You have desecrated your trust upon the earth. Your priest, Okrulla, has been a scoundrel. He has sought to rid the land of Atlantis of the white men! It was not with my approval! It was prompted by his greed. I have come from my heavenly abode to save this fair daughter of the high priest of the white men. Had you killed her, every single one of you would have been struck with my noise! Arise!"

They rose to their feet and gawked shamefacedly at the towering head which had spoken so rebukingly to them. The mention of the noise had brought them to a quaking stand.

"Hereafter bring food offerings to the altar. Begone with blood!"

They filed out quickly, daring not one look backward, lest that thundering voice of the gods strike them down. In a short while the chamber was empty.

Mansfield turned to the girl and helped her down from the death-slab. She clung to him as to a long-lost brother; his strong arm gave support around her waist. He kicked aside the small panel which led them under the shrine; they entered, then he kicked it shut once more. The hollow shell resounded to the echo of their feet.

In the room of the robes Mansfield placed the girl upon a soft lounge, tore off the hideous thing he wore. His face was shining strangely, suffused with the unexpected success.

"Sir John, truly you are a god. Only Ra could have done what you did."

He laughed. "Okrulla is gone, Venia.

The blacks are too simple-minded to defy a religious belief!"

She debated the statement. "Do you know who Okrulla was? He was the black whom we captured once, and to whom we gave the brain treatment. But something didn't work out according to the rules and he disappeared with many ray-tubes. There are several more like him here who did that. It is those blacks we have to contend with. They forget easily. Soon they will be trying to get us again."

So that was the reason for Okrulla's reasoning power! Well, he was gone now. And he rather thought the dangerous uprising was over. He told it to the girl, but she shook her head.

FROM her he discovered that she had been captured during the attack upon Atlantis. Several blacks had masqueraded as temple servants and had taken her off during the battle. She shuddered when he asked her of their treatment. Only too well did he remember that chamber which had exacted so much of her.

Presently he glanced down and saw that she was asleep. Poor girl, he thought. She needed it. She was tired and worn. He curled himself up in a silky robe and sat at the foot of the lounge in deep thought. Now that he had the upper hand, he must devise some means of getting out of there with her. He might be able to play this rôle of Ra for a while, but the effect would soon wear off amongst the blacks. That wouldn't last forever. And this gun was his chief hold upon the creatures.

The thing to do, he told himself again, was to bend every effort to find where the outlet of the underground habitat was. He realized that it would have to be a crafty approach. The minds of these fellows wouldn't understand if the great Ra suddenly asked them the question. He must know everything! And he really knew little.

But he was glad now that Okrulla was gone. Probably he had been the only one who had ever gone into this room. He would have immediately recognized that mask robe which he had worn, would have known that someone was resorting to trickery. And he would have been a deadly enemy with that knowledge.

Thinking, musing, Mansfield nodded, and lay down at length for a moment of relaxation. He needed it badly, too. His whole body just yearned for a sweet repose.

Some time later he awoke, feeling old strength flowing back into his veins. It had been the first sleep he had had since that impromptu one up in the Great Sphinx—and didn't it feel good! His body clamored for a thing just like this!

He moved to the shell and looked out of the slit. A smile broke over his face. There was a great platter of food upon the altar. His orders were being followed out to the word. The body of Okrulla had been taken out, too. A deep silence pervaded the chamber.

He removed the food and took it into the inner chamber. He awoke Venia and they ate in silence. Both ate famishedly, a contented sigh falling when they had had enough.

"Venia, we can't stay here. Our only chance to get out of this place is to get out among the blacks. We might hear something which will show us. But don't ask any questions. Come, don one of these robes."

It was a good idea, she admitted. Staying here would lead them nowhere, that was positive. He helped her put on one of the robes, adjusting it so that it didn't drag on the ground, then dressed himself in the ugly garment as be-

fore. Underneath the garment he gripped securely the gun, ready to draw the trigger finger back into the speech of death.

They went out of the shell, into the chamber of the many benches, and walked slowly to the door.

"Under no condition," whispered Mansfield, "must you get separated from me. It is our only salvation. Keep your eyes open. And I'll do all the talking that must be done."

She nodded, the grotesque head bobbing up and down. They left the entrance behind them and emerged into a long corridor. Several blacks were lolling there and their eyes popped as the godly creatures came out of the chamber of rites. They fell upon their knees in humble subjection. Others issued from doorways and saw, too, the heavenly beings going slowly along, and they responded also with obsequious bows.

THE two moved along without a word, occasionally prying into a chamber. They paid little attention to the black men and women who flattened themselves out at their appearance. On and on they promenaded. Then Mansfield caught a glimpse of the stairway which led downward to the lower paths, the one he had rushed up ahead of his pursuers.

He nudged the girl. "This might lead us somewhere. I know there are lots of blacks below. Might hear something."

They started down. At one place, the bend in the flight, he saw the cloth in front of the alcove through which he had been catapulted. He couldn't resist pulling it to one side and scrutinizing the slab which moved inward to the priest's sanctuary. In some manner he must have exerted pressure upon the right spot. It was a wonder the blacks hadn't discovered this before.

Down in the corridor beneath, they found many blacks, and their sudden entrance brought a hush which was answered only by the lowering of the heads. The great deity, Ra, was walking amongst them! The supreme god of all! The beastly visage adorning Mansfield scowled ferociously, but inside there was a smile.

They came to a doorway and Mansfield felt the arm on his side quiver with a shudder. He gazed up askance, forgetting that he couldn't read that inhuman face. Then he understood. It was the torture chamber. Orientating his position by it, he gazed down the length of the passage and saw that the pit of horror was down at the other end.

Mansfield tried to figure this out. It stood to reason that, if there were an exit out of this place, it would be at a high level and not down here—somewhere at the highest elevation. But where was that? In the labyrinth of corridors it was a trying task to figure anything out like this. He'd better get up and search the upper passages.

Then a shriek split his eardrums and he whirled. The corridor was empty! The girl had vanished! In some stealthy manner Venia had disappeared. Again that scream rent the atmosphere, but this time it ceased suddenly, as though the voice had been choked into silence!

CHAPTER XIV

Doomed

MANSFIELD cursed himself for the fool he was. Venia had been right. The blacks were never to be trusted. They were dangerous at all times. And he, the dupe that he had been, had been led on by their silly demonstrations and had trusted that they were believing him to be Ra. All the time he had been drawing the girl

and himself closer and closer into their net.

It was plain now. They were afraid of his gun. It was easy for them to know beneath which robe he was. And artfully they stole the girl right from his side. They had been afraid to tamper with him. He spat death too viciously.

Ra! These bestial minds accepted no deity, he told himself scornfully. They might be easily frightened, but only for the moment. Nothing could subjugate these brutes for any length of time.

The capture again of Venia had happened so spontaneously, that he didn't know where to turn for the moment. He clutched his weapon with a fierce grip, swept the corridor about him with a swift scrutiny. It was bare of all life. Then, like a streak, he sped down to the end of the passage to the chamber of the circular pit of the man-eating gray matter.

It was familiar ground he trod on now. Not so very long before he had scuttled down this very passage like a trapped beast and had succeeded in freeing himself and coming out on top. But now it was a different matter. There was a lump in his throat at the thought of that scream which had suddenly stopped, at the thought of the danger the girl might be in now, and all due to his abominable carelessness. She might be dead by this time. The black devils were desperate. They wouldn't take chances any more. A defenseless girl meant nothing to their crooked minds. A prayer broke from his lips for her safety.

He flung aside the cloth from the ante-room of the pit of doom. And immediately he had his hands full.

There were a half dozen blacks there armed with clubs, apparently waiting for him. The moment he bounded into the room, they fell like a scourge upon him. His gun barked once and the foremost black fell backward, stumbling into two who were right behind him, knocking them both off their feet. The flashing eyes of the scientist saw a heavy club swing toward his head with crushing intent. He tried to leap out of the way but did not succeed. It crashed into him!

He had Okrulla to thank for the negligible damage the wooden club did. The headdress was composed of a strong material that made the club bounce right up again and out of the wielder's hands. The tight-fitting cap of metal bore the full brunt of the blow, which hardly dazed the white man.

MANSFIELD tore the robe away from his shoulders, freeing his firing arm for better use. Once again the gun barked and another black pitched to the ground. Two negroes were now on the floor, one pawing the air and with distorted face—the other flattened against the stone.

The blacks were nerved to fight it out to a finish. They wanted badly to rid themselves of this man with the noisy thing in his hands, who still had the hideous head perched atop of him. But their very own eyes had seen what had happened to two of them after the same number of loud cracks. It was disheartening to pile in against such an incomprehensible factor of supernatural deadliness, yet with cries of abandon they flew at him, to get in a finishing blow. Their shrieks of rage cluttered up the room.

But this was what Mansfield liked now. At close quarters he couldn't miss hitting their bodies. The only thing which might worry him was that his gun would be emptied and more of the blacks would rush in before he could refill the chambers. But that was a passing fear.

The blacks could stand no more of it after two more of them crashed to the ground. They dashed for the door and plunged out head-first.

Mansfield leaped over the fallen bodies and brought up against the panel. A swift glance into it and a fearful cry burst from his throat.

"Venia!"

The girl was lying on the slope, her fingers holding tightly to the edge of the narrow ledge. Her eyes were shot with terror. Slowly she was slipping downward, her white hands bleeding from the fierce but impossible attempt to clutch securely.

At the sound of his voice she looked up at his grotesque head silhouetted in the opening, her lips trying to form some word. But Mansfield didn't need that word to see what she was going through. He slammed the gun into the holster and in the same motion was through the panel—just as the girl let go and commenced to slide down to a horrible death!

In a twinkling he tore off his cumbersome sham of a masked head and he cast it out toward the center of the pit. Then he threw himself face downward on the narrow ledge, and then gradually slid off the rim upon the decline, his feet behind him ramming hard into the unyielding rock. He now let his upper part of the body sway slowly, carefully, rigidly, his arms stretched far out to the slowly sliding girl.

She was skidding down and down and her eyes were wide open to the attempt of the Englishman. Her fingers kept pace with her descent by rubbing perspiring lines in the slope. And then she began to gain momentum!

MANSFIELD'S torso was now fully out over the ledge; his eyes stared unafraidly at the circular pit, which now looked so dreadfully close. With one hand braced under him, he shot out the other to the girl and Venia, desperation forcing her to her utmost to stop the maddening glide, gave a sudden leap! If it failed, the next moment would see her shoot down at a speedy pace with but one end. But it was her only chance!

Her fingers fell into the outstretched palm of Mansfield. The moment that bleeding soft hand dropped into his, a vise encircled it. It stopped altogether the fall of the girl, but it pulled him out of position and he felt his feet give way behind him. For a moment he was positive that it was all over. Then the loosened feet again held and he was secure with the girl in his strong grasp.

But safety was far from being a fact! There remained yet the arduous job of getting both of them out of the precarious position. Neither was in a shape to move around without drastic result.

Mansfield, thinking hard and fast, felt that there was only one thing to do. He'd lie like this and brace hard. With his hands he might be able to work the girl up and past and over him. In that way she might be raised until her hands once more reached the ledge and she was able to get back upon it.

Quickly he outlined the plan to her and she nodded briefly with understanding. His tense hands pulled her up inch by inch until he was grasping her around her waist; then she was able to move up on her own power. Once she slid back for a short distance, but he halted that immediately. Those steely muscles dug into her without regard; he knew he hurt her. In a short while the soles of her sandals flicked by his sight and disappeared.

He heard her laboring breath pant: "I've got it!"

Then came two small but powerful hands wrapped around his ankles, and in

a jiffy he was back upon the ledge. The girl dropped upon it in exhaustion, devouring him with eyes full of thanks. Her face was drawn with the suffering she had undergone.

Mansfield made as though to sit down next to her, when a blood-curdling yell came from behind him. He whirled and saw a leering countenance in the panel. A negro stood there, club in hand, sneering at them.

"Ra! 'Tis none else but the stranger! He escaped once from the pit, but now——"

A LOUD, rising cackle burst from him as he slammed shut the opening, just as the scientist lunged at it. From behind it there died away the throaty, high-pitched voice.

Mansfield's balled fist could make no indentation against that resolute rock, and with a shrug of his shoulders he turned away from it and looked at the girl.

"Venia, do you know where we are?"

Her blonde head nodded. "It is the man-eating matter. I know, for the blacks copied this chamber from the one in which we imprison dangerous negroes."

"Then you know what this means. We'll be kept here until we slip from exhaustion down there."

She didn't reply, but leaned with back against the wall and clasped her arms about her knees. Her blonde hair was a sheen from which sparkled the tiny drops of irradiating beams from the walls.

And then something came over Mansfield, something which had never happened to his manly life before. He wanted of a sudden to take that beautiful, courageous daughter of the high priest in his arms and caress her. His heart was trembling strangely. The girl's drawn eyes were staring unseeingly into space. It molded her features into a classic piece of sculptured marble. Each contour, each line was perfectly chiseled. She seemed to have matured, blossomed into superbness within a brief interval.

"Sir John," she said without turning to him, "if we ever get out of here, the white men of Atlantis will revere you more than ever before. Since your coming many unbelievable things have occurred. You have fought with your own life for our welfare. Does your land contain all of your type?"

He wanted to tell her that any living man, given one look at her, would have laid his life down in her defense, but she was so serious in her statement that he could say nothing.

The girl searched his face under an intensifying study. "Your land is one place I would have liked to see. If it bears your mankind, it must be heaven to live in."

Mansfield had to turn away from her keen look; it embarrassed him. He changed the topic with: "Where is the entrance to this hole? You must have seen it when they brought you down."

She shook her head. "They blindfolded me. I don't know where they led me in."

Mansfield didn't understand it. As he had reasoned before, it seemed probable that the opening would be somewhere in the upper corridors. It appeared logical. The higher one got, the closer he would get to the upper ground. He knew that the entrance was through the cellar in which he had been captured. But where that led to down here was an enigma.

WHAT caused him to think of that, when there was no chance for them to be freed of this pit? Was it that he wouldn't—couldn't give up in the face of insurmountable odds—because of the girl? He glanced at her and

something caught him up. Confound it, why had she been forced into all this—such a beautiful thing? It wasn't his sense of justice. He wouldn't mind it much if he had to figure it all out, were he the only one. But her presence made his every move heavy with weighty precision. Nothing he did could be wrong from now on. He hadn't himself to think of.

He could easily read the resignation on Venia's face. There was something about the man-eating stuff that cowed every soul in Atlantis, black or white. In spite of the rays which controlled it, it was an indefinably conclusive essence which could not be dealt with, or hoped against. Its malignant, overpowering effect was final!

Still, he told himself grimly, he couldn't give up. The blacks held the upper hand now. But he didn't forget that he had once escaped from this very same spot! Those fellows would keep them down here without food or water until they became incredibly weak; then, with nothing to support their failing arms and legs, they would slide down in some moment of unwariness. That was the way this pit of doom worked!

How many hours passed thus in thought, he did not know. The silence and stillness of the chamber was working on him. He didn't want to get up on his feet lest he totter. He had been staring too long at that lighted circle in the concave center of the chamber for his own good. It had him dizzy.

The idea had been lurking in his brain for some time, before he found himself aware of it. He gnawed at it. It was the only thing they could do. It had to succeed!

He sat at the side of the sleeping girl, holding her hand, lest some slight movement in her slumber would send her tumbling over the side. Venia was sleeping so peacefully that he was reluctant to awake her. But the success of the idea was dependent upon being in readiness. And the opportunity might pass while she slept. He awakened her.

End of Part II

Peace Weapons

By ABNER J. GELULA

The rather impressive illustration, which our readers have before them, will give a sort of clue to this wonderfully interesting story, in which is involved a very ingenious bit of human nature and which tells how under the conditions described, which seem terrible at first sight, good was eventually brought about.

Illustrated by MOREY

THE emergency session of the League of Nations broke up in wild disorder. The impassioned pleas of the chairman urging the representative nations to continue arbitration for an amicable settlement of the territorial dispute, fell upon deaf ears. The peace of continental Europe as well as the very existence of the League itself hung in the balance.

For thirty-seven years the League of Nations had functioned in the regulation of international questions. Even among major powers the judgment of the World Court had been respected. Questions of rights had come before the international tribunal before and always the disputing nations abided by the decisions handed down. The comparative peace that reigned for more than a third of a century had almost established itself; and a feeling of security had taken root.

But now, a new generation held the reins—a generation who knew only of the glamour of war and nothing of its tribulations. Time had greatly eased financial woes, so that again the talk of increasing armies and building navies could be resumed without the presence of an annoying financial spectre. In fact the cost of war might now even be less than the cost of previous war, if the consideration of possible damage to property by the enemy, is excluded. A modern war should be fought in the air—and planes cost almost nothing compared with the mammoth, cumbersome battleships formerly used. And the infantry which was still recognized as the backbone of the army, would find it comparatively easy-going under the sheltering barrage of long-range guns, bombing-planes and gas screens.

The chairman of the League, despite his realization that any further effort to induce a continuance of arbitration was futile, pounded his gavel for order. But his entreaties were as the chirp of a canary in a boiler factory. The League of Nations had failed!

Morton Hardy, unofficial representative of the United States, sat in the sidelines, quietly watching the impetuous activity of the membership. Absent-mindedly he drew an empty pipe from his pocket and placed it firmly between his teeth. "Nothing can stop them," he murmured. He ran his fingers through his greying hair and sighed, as if the responsibility for the entire proceedings

Already huge spiders had spun gigantic webs between buildings and across streets. Men had been caught in the snares and drawn into the greedy monster's larder.

rested upon his shoulders. It demanded no keen powers of observation to see that war was imminent—a war that again threatened to engulf all of Europe if not every nation of the world!

During the height of the demonstration, while delegates of the major powers of Europe flung gauntlets of defiance into the tribunal, Hardy bent his head slightly toward a colleague who sat beside him, commenting: "The League of Nations never could and never shall become a force for world peace until it possesses within itself the power to endorse its demands—a police department, so to speak—to make the bad little nations be good!"

And it was only a matter of weeks, after the hectic adjournment of the League, that the first shot was fired and continental Europe again found itself in flames. Battle lines, guarded by a new generation of youth, declared the advent of another war—fiercer, more deadly, more horrible than any war in the history of man—a war fought according to the dictates of a modernized science. It was a war of engineers and death-dealing machines—a war that threatened the very roots of civilization.

THE entrance of the United States into the melee also appeared imminent. An embargo placed upon United States ships in several foreign ports indicated an early, active participation in the hostilities.

Hardy had returned to Washington. There was little more, that he could officially report, than that which was already common knowledge through the newspapers. The League had failed in the face of an overwhelming desire for war, he stated simply. There was nothing that it could do about it; the entire situation had resolved to the mere insinuation "Stop us if you can." The entire procedure had made a deep impression upon the man. Although not a pacifist in any sense of the word, he realized only too well the fact that modernized warfare would no longer confine itself to the mere slaughter of troops—that entire cities would be annihilated, civilian populations wiped out, and disease and famine would follow in the path of the new Scientific War God just as surely as it had in every conflict since the days of Mars.

Through his access into the inner circles of Washington, Hardy spared nothing in the use of his every influence to lessen the extent of the catastrophe. But his efforts were futile—puny in the face of the efforts of others who, under the guise of patriotism saw immediate gain or personal glorification in the opening of hostilities and, beneath veiled innuendoes, advocated it!

Hardy drew more to himself as days went by and the fever of patriotism spread over the country. His favorite haunt was the exclusive "Arts and Sciences Club" in Washington, where, in the quiet of the spacious reading room that overlooked the meticulously trimmed grass bordering the Potomac, he could dream of a world that truly sought for peace and pursued the ways of contentment.

A book, through which he had been idly glancing, lay carelessly upon his lap as he gazed at the small gun-boat that basked sleepily in the Potomac beneath the ray of a warm June sun. The arrival of someone in the room brought him abruptly back into a more material world. He turned to see who had entered.

"Ah, there you are, Hardy. I thought I'd find you here." McClellan, chief of staff of the Bureau of Entomology addressed him. They were old friends and Hardy rather liked that kindly old man. This regard for him might have been due to his vocation, Hardy once thought, for his entire life had been spent in

aiding mankind to utilize science in making living happier instead of more unbearable. He was sure that if McClellan were an army officer, he would not have cared so much for him. Often, as a side interest, Hardy would visit the old man in the extensive research laboratories of the Bureau, and for hours would listen interestedly to the savant's explanation of the value of some tiny insect pinned beneath the powerful lenses of a microscope, or about the work of the Bureau in its efforts to cope with some particular species of insect, that might be playing especial havoc with the nation's crops. These visits afforded Hardy a relaxation for it carried him off into another world—a world where numbers constituted strength and by these numbers alone presented the greatest single menace to mankind.

ANOTHER man, whose pleasant face Hardy seemed to recognize, accompanied the scientist. He tried to recall just where he had seen him before, but the introduction soon filled the gap in his memory.

"Hardy," the entomologist began, "I want you to meet the greatest living authority on insects, Professor Milton Kingsley. Professor Kingsley doesn't get to Washington often," McClennan declared by way of acquainting the two with one another, "so we try to show him around properly when he does come our way."

The two men shook hands in greeting.

Turning to the visitor, McClellan continued: "Mr. Hardy, of whom you have no doubt heard, is one of America's prominent diplomats. He has just returned from Geneva where he witnessed the upset of the League of Nations. But aside from his diplomatic abilities, he is profoundly interested in entomology."

Professor Kingsley smiled. "Your two interests are quite well removed from each other," he commented good-naturedly. "From the politics of men to the instincts of insects. . . .

Hardy chuckled. "Yes, the two have quite a gap between them, but that is all the more reason for my interest. After watching the ways of men, it is quite sible to study the ways of more lowly creatures!"

The two men had seated themselves and McClellan asked to be excused for an hour or so to attend an important meeting.

The trend of conversation between the diplomat and the scientist soon turned to their common interest and to the subject of the famed control that Kingsley had established for the farmer, saving millions of dollars in crops each year.

Hardy was glad to talk of anything that would aid him in forgetting international troubles and complications. He listened eagerly to the professor's learned discourse regarding certain tests he had made on the relative strength of insects.

"The wonder of nature cannot truly be appreciated unless one considers how artfully she has scaled down the strength of her creatures: the application of the law of diminishing proportions," he said. "Can you imagine the consequences, if man, for instance, possessed the proportionate strength of an insect? I have conducted tests along these lines and the findings are astounding—hard scientific facts that might almost appear ridiculous!"

Hardy nodded his head appreciatively.

"Consider the ordinary black ant, for instance," the professor continued, "that tiny creature that abounds all over eastern North America. Such an insect under test, traveling with a dead spider in its jaws, the victim weighing more than twice its captor, ran vertically for two feet in a fraction under two seconds! It measured one-fourth of an inch in length. If a racing automobile could

travel as fast in proportion, it would attain a speed in excess of 400 miles per hour and a locomotive, proportionately, could make the New York to Los Angeles run in just slightly more than 6 hours! Why if this insect were the size of a man it would be by far the most powerful creature on earth!

"Then, reflect upon the capacities of the ordinary beetle who finds no difficulty in exerting a pulling-force of 850 times its own weight! On this basis, a man could easily drag a block of granite weighing 65 tons. And the grasshopper, just an inch in length, leaps 15 feet with a minimum exertion. That grasshopper, if it possessed the proportions of a man, would leap a distance of four city blocks!"

THE professor halted his discourse.

"I've never quite considered the insect in that light before," Hardy declared. "How fortunate man is that he doesn't have to worry about warring against *such* monsters. Goodness knows, the machines that man invents to kill his fellow men are bad enough!"

"Well, now, I don't know," the professor drawled slowly. "I am firmly of the opinion that the insect in its present tiny state is far more of a menace, than if it were the size of animals. The difficulty in entomology has been in the proper study of the insect. His very size is his most potent weapon. But, I think things may be a bit different now. . . ."

The professor's demeanor seemed to change suddenly as he neared a point in his discourse that apparently bordered upon forbidden ground. His eyes gleamed in enthusiastic anticipation. He rubbed his hands together as he repeated words that trailed off into nothingness: "Things may be a bit different now. . . ."

Hardy was visibly curious, but propriety forbade pressing the professor for an explanation of his mysterious phrase. Yet he ventured a question that might draw him out a bit.

"So you feel that now you have found a way of definitely aiding the more minute study of the insects?"

Professor Kingsley turned and looked at his questioner for several seconds without speaking. Then he began, slowly:

"You are a friend of Dr. McClellan's and a trusted diplomat in the service of our government. There's no reason why I can't tell *you*. Yes—, Mr. Hardy, I *shall* tell you. You shall be signally honored, Mr. Hardy, for you shall be the very first to know of my discovery. It is because of my discovery that I am here in Washington, but no one knows that that is the reason for my visit—yet!"

He leaned forward in the heavy, leather-covered chair and dragged it an inch closer to Hardy. His voice dropped to almost a whisper.

"I have eliminated the need of the microscope in entomological study!" he began. "Instead of peering through a glass to magnify the insect, I have discovered the means of increasing the size of the insect itself! I can study an insect as a vivisectionist studies an animal! I have discovered the secret of insect growth!"

Hardy's eyes widened perceptibly. A man of Kingsley's standing would make no idle boasts. He listened, scarcely believing, yet forced to believe on the reputation of the man.

"I can enlarge the insect," he added, "many times—hundreds of times! An ant as big as a dog! A beetle as big as a horse! A wasp like an airplane! A spider that spreads its hairy legs across a boulevard! I have done it, Hardy, and you are the first, except for my daughter, who has aided me in my experiments, to know about it! Think—

think how simple it will be to study. . . ."

SOMETHING flashed across Hardy's mind as he listened entranced to the staccato-description of the mammoth bugs. Was such a thing possible? If anyone, other than so eminent a personage as Dr. Kingsley, had told him of such a thing he would have laughed it off as mere nonsense. If this were true. . . .

He clutched the professor's arm.

"Are you *sure* that no one knows of this?" he asked, almost fiercely.

The professor assured him that it would not be made public for several days yet—at least until a demonstration had been given. But why this sudden agitation? What difference could it possibly make if some one did know about it?

"Pardon, Professor Kingsley," Hardy said, apologetically. "The possibilities of your discovery quite overwhelmed me for the moment. I believe that I see a future for your discovery, that you scarcely imagined. It is great! Stupendous! But it demands the utmost secrecy for if what you describe is actual fact, civilization shall never forget you as its greatest benefactor!"

The professor was puzzled, the man spoke in circles. His languid frame had suddenly taken on an abundance of energy and he was clearly agitated about the discovery.

Hardy waxed serious. "Professor, as a member of the Diplomatic Service of our Government, I beg that you keep this discovery secret. It means more—a thousand times more—to humanity than all the crops in the world! No one else must learn of this until a later date. I cannot advance the reason now, but you must trust me that I am working for your benefit as well as for all the world! Please, I beg of you, give me your solemn promise that no one shall yet learn of this matter."

The professor looked at him quizzically but refrained from further questioning the reason for this sudden, all-absorbing interest in his discovery. He felt pleased, however, in the display of importance attached to it, and pledged his word of secrecy.

"And now, Mr. Hardy, if you would care to be my house guest for a week or so, I shall be happy to demonstrate that what I have told you is no boast or exaggeration."

Hardy leaped at the proffered invitation.

FURTHER conversation was interrupted by the arrival of a young lady accompanied by a man. The girl was introduced by the professor as his daughter, Doris. The man, Albert Blake, a member of the staff of the Bureau of Entomology, was known to both men. He had been acting as a guide to Miss Kingsley, this being the girl's initial trip to the Capitol City.

"We had been wondering what happened to you," Doris said, addressing her father. "But Dr. McClellan told us where you were, so we thought that you might like to join us in our sight-seeing trip."

The professor declined graciously and the girl, followed by Blake, strolled over to a large window, to better view the scene that spread before them.

Hardy had been doing some rapid thinking. A new enthusiasm filled him. He had an idea. It was different. Radical, drastic. But he was certain that it would be effective—if only that which the professor had described to him proved to be an actual fact! He was studying Blake. He might fit perfectly into the plan. Hardy spoke quietly to the professor.

"If I might impose upon your hospitality," he said, "May I ask that the young entomologist, Blake, be invited to attend the demonstration at your home?"

The professor was visibly puzzled by this request. It was only a few minutes before that he had sworn him to secrecy, and now he asked that a subordinate of the Bureau witness the demonstration. If he had asked that McClellan attend, it might be understandable, but Blake. . . . He assured Hardy, however, that the man would be entirely welcome.

Hardy extended the invitation to Blake and he accepted with an alacrity that made his sidelong glance toward the girl full of meaning. Her face beamed a cordial welcome. Questions of how he might secure leave of absence from the Bureau were solved by the assurances of the diplomat.

Hardy made it his business, that evening, to locate Blake at his home. There, in the privacy of his room, Hardy spoke to the young man.

"You are no doubt puzzled regarding the reason for this invitation to the home of Professor Kingsley," Hardy began.

Blake had been more than puzzled. A man of the standing of Morton Hardy to ask *his* company on a trip to the home of so eminent a scientist as Professor Kingsley? It was beyond understanding.

"Well, I didn't come to tell you. I came here this evening, Blake, to determine whether my judgment that you are a young man of ambition and foresight and ideal, is correct. If I am wrong, the invitation is cancelled."

Blake peered at the man intently. Thus far, his conversation had been most mysterious. There was no reply.

"But, I am sure that my judgment is not in error," Hardy hastened to add. "Your record at the Bureau is most satisfactory—you see I have been looking you up.

"We leave to-morrow for the home of Professor Kingsley, a farm situated about 50 miles from Boise, Idaho. But before we go, I want to have an earnest talk with you. This trip, Blake, may be the beginning of the greatest chapter in the history of mankind! We are going to watch Professor Kingsley conduct an experiment—an experiment such as no being has ever witnessed before! I shall not tell you what is its object, for, if it is a success, you shall know of it; if it is a failure, just charge this trip up to a pleasant vacation."

Hardy paused. The quizzical expression that held Blake's features had seemingly frozen to his face. As yet, he knew little more than he knew before.

"But to-night, before I leave, I want your solemn promise that whatever subsequent action may develop from this demonstration, you shall consider yourself a soldier in an army composed of one man—yourself! You shall not be asked to do anything that I myself will not do, but that does not minimize the possible danger. Is it agreed?"

Blake hesitated only a moment. "You may rely on me, sir," he replied firmly.

"Fine, fine," Hardy smiled. Then his face again assumed a serious solemnity.

"Just one more thing, Blake. Swear to me that, until I release you from this oath, you shall never describe or repeat anything that you may see, hear or learn at the home of Professor Kingsley, during this trip!"

"I swear it," he vowed, fervently.

IT was a few days later that Hardy and Blake were seated in the laboratory in the home of Professor Kingsley, silently watching the savant begin his fearful demonstration, and eagerly listening to his enthusiastic words of explanation. From a nearby incubator, he drew an insect.

"Just a common black ant," he declared, "which I shall place in this small cardboard box." And he fitted the action to the words. He placed the box care-

fully on one side of the laboratory table.

From a shelf overhead, he removed several bottles and with minute exactness, he proceeded to pour some of the contents of each into a test tube. Carefully measuring three drops of a final liquid, he breathed a sigh of satisfaction. He held the crystal-clear fluid up to the light.

"Here it is, gentlemen," the professor proclaimed as he looked up at the tube almost worshipfully. "The elixir of magnification!"

He picked up a medicine-dropper and carefully drew part of the contents of the tube. Without speaking, he signalled for the two men to draw closer to witness the procedure. He removed the lid of the cardboard box disclosing the ant crouched in a corner, slowly waving its antenna, as if sensing some possible danger. Bringing the dropper close to the insect he carelessly dropped a portion of the fluid directly upon it. It squirmed a moment, then lay sill. The professor replaced the lid of the box and then turned to his guests.

"A growth gland is affected," the scientist explained. "But just which one, or where it may be located in that tiny body, I have as yet been unable to determine. But the chemical speeds up the action of this gland to such an extent that in twelve hours that tiny ant will—well, you shall see to-morrow morning.

"After all," he continued, "everything rests in glandular control. Why is it that, with all life originating with the cell, that one cell may develop into an elephant and another, of equal original size, became this little black ant? Science may never know *why*, but it now has learned to control this growth—or, shall I say, uncontrol it! Happily, however, with the exertion of this growth-gland, reproduction of the species is halted."

The professor then led the way into a rear yard of the house and deposited the box on the concrete floor of a miniature garage-like structure. Carefully he bolted the door of the building and the three men returned to the house.

"In the morning, gentlemen," the Professor said, "we shall find something more interesting in the chamber. But as a word of warning: you must satisfy yourself with viewing the live specimen through the heavy glass window in the wall. It would be neither healthy nor pleasurable to face it in the open," he chuckled.

THERE was little sleep for either Hardy or Blake that night. Anticipation of what the morning promised found both awake with the first grey light of dawn. Hardy arose and proceeded to dress slowly, for he was sure that the Professor would not arise so early.

His bedroom window overlooked he rear yard and he casually glanced outside while he dressed.. His eye was suddenly arrested by a movement in the indistinct light of the early morning and he peered through the grey haze.

An involuntary shudder ran through his frame. His eyes wandered to the concrete chamber and he stood transfixed as he gazed at the wide-open door! Again he looked toward the moving object in the yard. The clearing light left no doubt of what it was—there it stood, the tiny black ant in horrible, mammoth proportions—fully three feet high and almost six feet long! It was calmly nibbling a near by bush that its huge, scythe-like mandibles had cut down with the force of a reaper!

There was no time to be lost! He called to Blake. Hurrying to the window, Hardy pointed to the monster that squatted contentedly munching the greens. He stifled a cry of amazement at the

sight that met his eyes. "Call the Professor," he cried!

Professor Kingsley, realizing more clearly than either of the two men the terrible danger of allowing the giant insect to be at large, fairly leaped into his trousers and shoes, and hurried down the stairs.

"This is liable to be dangerous," he warned Hardy and Blake as he handed each a long, heavy iron bar. "But we must kill it at any cost!"

The three men cautiously made their way into the yard and, under the prearranged direction of the Professor, surrounded the creature who, thus far, had seemingly taken no notice of their approach.

Then suddenly, it seemed to recognize their presence. Fearlessly it turned to face each of the men, in turn, as if undecided which might prove the most worthy adversary. Its actions were lightning-swift. Its expressionless, multiple eyes gave no inkling of what plan it might be conjuring in its over-grown insect brain. Each man held himself tense and ready.

ACTING under the Professor's commands, the men slowly closed in. Then, suddenly, with an incredible speed, the giant ant charged directly toward Hardy. The man was prepared for such an attack and, bracing himself, he poised the long iron rod directly for the head. The other two meanwhile, had jumped into action and with terrific force crashed the rods upon the head and back of the monster. A distinct metallic ring issued from the impact against the steel-hard shell, but the blows came too late. Hardy's rod had pierced an eye, but the insect had seemingly taken no notice of it. With a vicious click of its mandibles, the ant fairly pounced upon the man carrying him down beneath its almost crushing weight. The mandibles continued to click maliciously as if in preparation for a final victory.

Hardy, overcome with horror, fought a losing battle against the vise-like clutches of the giant. Only the blows being rained upon it by Kingsley and Blake had distracted its attention sufficiently to delay his fatal contact with those flashing jaws.

Concentrating their attack on the vital and less-protected thorax of the insect, Blake finally delivered a blow that almost severed the head and brought a convulsive end to the offensive campaign of the mammoth creature.

With difficulty, the two men pushed the still-quivering body of the insect off the unconscious Hardy and removed him to the house. Bleeding profusely from the superficial wounds inflicted by the powerful appendages of the insect, and suffering seriously from shock, it was a week before he had recovered sufficiently to rise from bed.

But time had not been lost. Hardy had been laying his plans. There no longer remained the slightest doubt regarding the potential possibilities of the Professor's discovery. Although the scientist had not considered any further practical application of his elixir than for the easier and more detailed entomological study, the daring plan, that Hardy outlined, made him gasp in astonishment.

The Professor, Blake and Doris were called into the room where he lay propped up in bed. That they should be called thus together proclaimed the advent of some startling revelation—the imminent possibility that perhaps now Hardy would reveal the reason for his enthusiastic and mysterious interest in the Professor's discovery.

"I shall soon be as well as ever," Hardy began, slowly. "And then our real work shall begin! I shall need your help—

your loyal, unswerving, courageous support in the accomplishment of a purpose that means the salvation of mankind. I know what is going on in the governments of the world—and among the seething masses of easily-led citizenry. We are on the brink of another World War! It is inescapable. It shall come as surely as 'To-morrow' shall come. But this war may be the last war, for civilization can never survive its onslaught!"

The three listened in awe, scarcely breathing lest they interrupt the information that Hardy proceeded to impart.

"But, if we analyze the situation, we ask, 'What makes for war?' and the logical answer returns, 'International jealousies and hatreds and greed.' As long as human beings inhabit the earth, human nature must remain constant—it was the same in the early ages of man and it is the same to-day in his higher, more complex civilization. It is impossible to ever halt war by hoping to eradicate these basic attributes of man. Only one hope exists—provide a common enemy! Then there would be no wars, no international hatreds, no wholesale murder, if there could arise before humanity a foe that all nations alike feared!

"War would cease to exist if Idealists alone instead of Militarists, had the power to declare war! Mere man-made boundaries would cease to exist if the common boundary of humanity's existence on earth were threatened! Man has not yet reached the point in his civilization where he can respect an immaterial sentiment as sufficient reason to remain peaceful. That is why the League of Nations cannot enforce its demands for peace. But the League of Nations could enforce its demands if——"

HARDY paused a moment as if fearful of telling too much. Then he continued:

"But now, the League *can* enforce its demands!" he cried exultantly. "Don't you see—can't you realize—the League shall become a force for everlasting world peace for it now *has* its 'Police Department!' Not gas, not explosives, not huge armies or armaments shall ensure the peace of the future! But the lowly insect—the things that crawl and creep—shall be the enemy that all men shall cringe before . . . !"

THE Customs Inspector at Brest, France, where the liner docked, scratched his head questioningly. He was puzzled. Just what four entomologists could find, in this war-ridden country, was more than he could understand. He eyed them closely. Obviously, the first thought to enter his mind was that they might be spies—but that possibility was soon dismissed from his thoughts when he peered into the contents of a small leather case that the Professor carried and opened upon request. The case, divided into numerous compartments, was a seething mass of insects—bugs of every kind and species. The inspector hurriedly closed the bag and passed the four through.

The Professor, Hardy, Blake and Doris made their way to a Paris hotel where they engaged a suite of rooms on an upper floor. Hardy immediately searched the room thoroughly for any dictaphonic apparatus that might have been installed for the benefit of an occupant whose international integrity the government could in any way question. Satisfied that there was no eavesdropping being done, Hardy proceeded to unpack his grip and suggested that the others do likewise with theirs.

"You have the newspaper correspondents' credentials that I secured for you?" Hardy inquired of Blake. The young man produced them. "Well, be sure that they are in your pocket from now on,"

Hardy cautioned. And then he continued:

"And you, Doris; you have your credentials and your Y. M. C. A. hostess' uniform all ready?"

"Right here," she replied pointing to her suitcase.

"Fine, fine," he commented, enthusiastically. "And you, my dear Professor, you are guarding well the 'Common Enemy'?"

The Professor nodded slowly. Seated in a corner of the reception room, the scientist silently drew upon an unlighted pipe held tightly between his clenched teeth. His eyes dreamily surveyed the carpeted floor. His face bore an expression of grim indecision. Slowly, his eyes lifted in an introspective contemplation of Hardy.

"I wonder, Hardy, if you actually realize the possible consequences of your mad plan." Kingsley spoke as if merely thinking aloud. "Do you imagine that you can control these insects like so many soldiers? I have agreed to your plan, only because I have implicit confidence in your ideal, but I must again warn you: after the insects have been impregnated, it shall be too late to reconsider!"

Hardy smiled. "Whatever the danger involved, however great the risk may be, we must not falter now." He looked at the professor closely. "Remember, nothing we may do can ever be as fierce or as cruel or as relentless as the war now raging not many miles distant, on a half-dozen fronts. After all, a small poison to counteract a more deadly potion is not to be despised!"

Hardy picked up the Paris edition of the *New York Herald* that lay on a table in the room. Screaming headlines told of the thousands of men, women and children killed on the previous night by an enemy air raid over London. Gas and shrapnel had taken its toll. Hardy read the account aloud. "And the war is only beginning," he said. "How long can civilization stand under such a prolonged onslaught?"

THE diplomat paused a moment. "Come, come, now," he urged. "We must look into the future with hope, not with fear. There is work to be done! Tomorrow must see our ambitions well upon the road to realization!"

Blake and Doris went out later in the evening. They walked the main streets of Paris for an hour, enthralled by the sights and not a little affected by the distinct atmosphere of war that seemed to saturate the very air. It moved Blake, however, to voice a fear to Doris for her safety in the undertaking planned for the morrow.

"But you do not seem to realize the extreme danger to which you will be exposed," he declared, earnestly.

But she minimized the peril involved and waived his concern for her safety.

"I ought to make him stop this whole crazy idea," he suddenly exclaimed, hotly. "Why, he has no right to ask that you possibly sacrifice your life for a hopeless ideal."

But she pacified him with the assurance that she could well take care of herself under such circumstances.

"What we shall do to-morrow is more noble and less perilous than answering a nation's call to arms," she answered simply. "To desert our cause now would be to shatter the hope of world peace, forever! After this war, there shall never be another—whether we carry out our plan or not. But if our hopes are realized, the permanent peace that will ensue shall be under the banner of civilization—a banner that will be torn to shreds if our plan fails!"

Blake silently concurred.

The professor had remained in the room with Hardy that evening, carefully distributing the various species of insects into a quantity of small boxes.

These were divided into four groups: one for each of the men, and one for the girl.

Early the following morning, Hardy gave final and explicit instructions to each, together with a box of insects and a vial of the precious fluid concocted by the Professor. It was agreed that all would return to the room in the hotel, as soon as possible after the accomplishment of their designated tasks.

The Professor would accomplish his part of the program in Paris. Hardy would go to Berlin. Blake would make his way, as correspondent, to the front-line trenches, arranged through Hardy's influence. Doris, as a Y. M. C. A. hostess, was directed to the training camp where the soldiers of the allied armies halted preparatory to leaving for the front. The time set for execution of the plan was ten o'clock that night.

TEN o'clock chimed in a tower in Paris. Professor Milton Kingsley stared vacantly at the crowds of people that scurried along the brightly-lighted street that lay ten floors below. Slowly . . . hesitantly he turned from the window to the table near by. A group of small boxes were arranged neatly on the top. Mechanically, with steady hand, he uncorked a bottle of clear liquid and dipped a tiny nozzle into the fluid. He opened one of the boxes. A mass of ants struggled to escape from the crowded quarters. He pressed the bulbed nozzle in his hand, saturating the insects, then replaced the lid. Another small box was opened. Spiders clawed madly for freedom. A stream from the instrument and the insects quieted. Another box of bees, another of grasshoppers and finally a larger box of caterpillars received the same treatment. Professor Kingsley opened the window and again looked out at the street below. He hesitated only a moment and then, with a sudden determination, threw the boxes, singly through the window. . . .

In Berlin, a large clock on the Library Building indicated 10 o'clock. Morton Hardy jumped into a taxicab and instructed the driver to travel slowly through the city. The saturated boxes of insects were in a small case that he carried. As the cab traversed the business section of the German city, he threw the tiny boxes upon the various streets. Then he proceeded to the railroad station where he boarded a train to a bordering neutral country, and thence returned to Paris.

The radium-lighted hands of a watch on the wrist of Albert Blake glowed ten o'clock. No Man's Land seemed unusually quiet as he walked in nervous anticipation along the stretch of the first-line trench. Even the soldiers, whom he always believed to occupy the line so fully, appeared peculiarly scarce. He asked about this and was informed that this was one of the "lulls" that occur usually "just before the storm." "All Hell will break loose by morning," his informant prophesied. Little did he guess how right he was, Blake thought. Enfolded by the Stygian blackness of the trench and a starless sky, he drew from his pockets four small boxes, a vial and a rubber-bulbed syringe. By the dim light of a cigarette, he filled the syringe with the contents of the vial and then carefully sprayed the contents of each of the boxes with the fluid. Looking around him lest some one suspect an untoward act, he hesitantly clutched the boxes, then swung them into the blackness of the battlefield. A motorcycle dispatch messenger took him back of the lines for a train to Paris. . . .

In a Y. M. C. A. hut, ten miles behind the lines, Doris Kingsley heard taps at ten o'clock. From her two pockets, she extracted small boxes. In her stocking was a vial of crystal-clear fluid. A

sprayer was wrapped in a handkerchief. In the privacy of her room, she hurriedly filled the sprayer with the liquid, and transferred its contents into insect-filled boxes that she had laid before her. Replacing the boxes in her pocket, she left the hut and walked several hundred yards onwards and threw the tiny boxes, with all her force, in all directions. She then prepared to leave the camp immediately. Feigning illness, she asked to be taken back to Paris.

"SORRY, Mademoiselle, there is no means of conveyance available at the moment," a French officer informed her. "But surely, in the morning . . ." Doris didn't wait to hear further. Her heart sank within her. She rushed madly to an American officer stationed in the hut, pleading for some means of transportation to Paris. But he only smiled. . . . "In the morning, girlie, you can have a limousine. . . ."

It was a night of terror for Doris Kingsley. She alone knew, of the tens of thousands of troops in camp, the horror that the morning would bring. The hourly call of the guard that "all's well," droned in her ears until sheer exhaustion closed her eyes as she sank into a near by chair in the Recreation Hall of the building.

A grey, bleak dawn announced the advent of day and with it came a stir of activity. A soldier on patrol duty rushed into the room, his eyes wide with terror. Seeing only the girl, sleeping upon a chair, he shook her madly.

"Run for your life, sister," he cried. "A freak circus has broken loose!"

Doris awoke instantly. It was morning. Her first thought, with the wild-eyed soldier bending over her was of her anticipated fear—the insects! She ran to a window and looked out. The sight that met her eyes brought an involuntary recoil of horror. A mammoth grasshopper, ten feet in length, waved its hairy antenna as if amazed by the new world that appeared before its huge multiple eyes. In the distance several gigantic ants were scurrying, in characteristic zig-zag course, across the clearing. Soldiers appeared from everywhere, stunned by nightmarish monstrosities that infested the camp. Everywhere were insects—giant, horrible insects—who calmly surveyed the amazed men, who were prepared to do battle against them with puny rifles and pin-like bayonets. Mere bullets might well have been feathers, for all the effect such means of combat could accomplish. The steel-coated pellets, crashing against the smooth, rounded armor-like shell of the insects, richocheted as if contacting a steel shell.

Panic-stricken she fled from the hall into a small adjoining room. It took a superhuman courage to face these creatures and the girl sought the haven of safety that she believed this antechamber would afford her—at least until the insects had begun to scatter.

She closed the door behind her and held the knob as if exercising an added precaution against possible entry by any of the loathsome monsters. Suddenly, a sharp tap on an opposite window caused her to wheel.

An involuntary scream rent the tiny room. She tore open the door and fled back into the reception room. It was deserted. Outside, she saw men fighting the insects with guns and hand grenades, but the battle was a losing one and the creatures steadily gained ground against their puny assailants, without even a definite recognition of advance.

Doris looked back into the little room. Alone she faced the horrible sight: a gigantic head that pressed against the window glass while huge, horny mandibles tapped the pane. Its grotesque, faceted eyes peered unemotionally into

the room. Apparently unaware of the glass obstruction, the creature decided to enter the interior of the building and by a slight additional pressure of its body, the glass gave way.

THE girl was stunned with fear. Slowly, the shiny brown body of a monstrous insect forced its anterior section through the opening. Doris recognized it immediately as a huge beetle. She turned to escape, but to leave the building now might be even more hazardous, than to take her chances with the whims of this huge bug, that now attempted an entry.

A calm realization suddenly replaced the mad fear that had possessed her. Better by far to attack the insect while handicapped in forcing its way through the narrow opening of the window, than to wait for it to complete its entry and then attempt a hopeless defense against the overwhelming power of the creature.

Resolutely, she picked up a chair and hesitantly approached the repulsive head and hairy fore-legs of the beast. With mustered courage and every ounce of strength that she possessed she crashed the chair against the armored head of the bug. It scarcely felt the blow—or, except for a sharp click of its vicious mandibles, gave little notice of it. But it halted its attempted ingress.

She watched its movements for a moment. It seemed as if it were stuck in the window—straddled across the sill. Its movements had become more forceful and more convulsive. The sides of the building seemed to shake with its powerful efforts to free itself. The girl took advantage of the situation and rained blows upon it, but to no avail. It seemed far more concerned in attempts to extricate itself, than in the girl's pigmy efforts to kill it.

The door to the building suddenly burst open. Doris paled as she waited for the brief second that seemed an interminable age. She stood rooted as she waited the anticipated entrance of some other mammoth monster. A soldier dashed in breathlessly.

"Quick, into the cycle!" he cried. "I'll get you out of here. It was just discovered by other 'Y' workers that you were left behind."

The girl swooned with the sudden release of tension.

"Hey, this is a heluva time to faint," said the soldier, picking her up. . . .

The futility of attempting battle with insects, because of their almost limitless numbers, soon became apparent to the commanding officers. Accordingly, a fire had been built around the clearing and all were ordered within its circle. There, for the time being, the camp awaited the gradual disappearance of the monsters. . . .

IT was an unusually quiet dawn on the Front Lines. Through the slowly lifting mist of night, a lookout peered cautiously across the top of the trench. He gasped suddenly and sat bolt upright, as if an electric current surged through him, all unmindful of danger from an enemy sniper. With a cry, he tumbled back into the trench for he had looked directly into the hairy, awesome face of a giant ant!

In the distant enemy trench could be heard an alarm signal ringing. Apparently the enemy, a bit more alert, had already spied the myriads of huge, gruesome insects that infested No Man's Land, and were now crawling aimlessly in all directions. Above came the drone of flying creatures: bees, wasps, and flies!

The alarm was now ringing wildly in the French and English trenches. Thousands of men poured from their dug-out sleeping quarters, ready for the anticipated early morning enemy raid.

But no enemy raid would ever have struck such fear and astonishment into their opponents as did this sight. Already soldiers from the opposing trenches had climbed over and engaged the terrifying things in battle. But even armed soldiers were no match against the onslaught of the insects. The French and English soldiers leaped into the unprecedented fray and with bullets, gas and liquid fire, the two opposing armies united against the common foe.

Fear seemed to have been removed entirely from the creatures, for nothing affected them. The comparatively few, that succumbed to the fire and the gas, were replaced by hundreds more to fill their places. The insects were headed for both trenches; grasshoppers leaped hundreds of feet into the barbed-wire, severing it like thread with the uncanny strength of their powerful legs and mandibles; ants, running with the speed of race-horses, sped through the line of men bowling them over like tin soldiers, slashing with their scythe-like mouth pieces; repulsive spiders pounced upon the helpless wounded and bound them immovably in a silken web.

Tanks were called into action, but even these modern implements of warfare seemed useless: a battle between a tank and a mammoth beetle was only a battle between Man's tank and Nature's, and the powerful charges of the gigantic insect would bowl over the man-made contrivances, rendering the machine helpless.

The lethal gases only halted the activity of the monsters temporarily for with the return of clearer air, their attacks and demeanor became as ferocious as ever. Only hand-grenades seemed to affect them, but even under this assault the wounds inflicted upon the giants were seldom fatal ones. The plan to utilize liquid fire brought results as far as killing any insects that came in contact with the flaming hydrocarbon, but this form of attack caused the bugs to only flee before the fiery onslaught, retiring to a safer distance until this danger had passed.

Thus the new battle continued for days and nights; enemy soldiers forgot hatreds for each other in the hatred for this common menace, as they fought side by side along the entire front. The insects had spread for miles. Veritable thousands of the gigantic creatures there were; and with their appearance before a new battle line, soldiers rose from both trenches and took up arms in a combined effort to stem the advance of this horrible army.

At near by airdomes, on both sides of the lines, aviators had not yet learned of the menace that descended in the night. A patrol had taken off early in the morning, headed for enemy territory. Five planes, in battle formation, selected a three-thousand-foot altitude for observatory purposes.

IN the far distance a group of planes appeared headed toward the squadron. The leading plane, piloted by the commander, signaled to his accompanying ships to prepare for action. The speed of the approaching fleet seemed incredible. They traveled fully 200 miles per hour, the commander judged. He eyed them, still in the distance, inquisitively. Possibly the enemy had developed a new type of plane. Possibly . . . but wait, these were not planes! . . . These were . . . were . . .

There was no longer time to consider what the new-comers might be—it suddenly became too apparent—*wasps*—huge, grotesque, mammoth wasps. The planes were as much of a surprise to the insects, apparently, as were the insects to the pilots, for two had flown directly into the blades of the whirling propellers, killing the insects instantly

and crippling two planes now useless.

Horror seized the pilots and observers in the ships as they recognized the monster creatures. As if by a pre-determined signal the wasps surrounded the two planes that had become disabled by their contact with the other two insects. Powerless, the ships began gliding to earth. Undaunted by the ill-success of its fellow-creatures, other wasps leaped upon the planes. Terror-stricken, the pilots and observers abandoned the ships and dropped like a plummet for fully a thousand feet before pulling the rip-cord of their parachutes, hoping thus to escape the flying horror. But as fast as gravity pulled, so fast did the wasps follow the downward course of the four men. With the opening of the chutes and the flight arrested, the helpless men looked agonizingly at the circling insects. Bullets from the pistols they carried in a belt holster at their waist were of little consequence. Suddenly with a startling alacrity, one of the wasps pounced upon a pilot. A struggle ensued but the paralyzing stinger of the insect found its mark. Slowly the parachute brought its unconscious burden to earth.

And in the sky, the battle continued: three planes with machine guns, against overwhelming odds.

Then, in the distance, another fleet appeared. They were recognized as enemy planes. They were speeding into the fray. Immediately, the situation was sized up by the new arrivals, for they had already been apprised of the existence of the creatures. A "hand-to-hand" combat ensued: plane against wasp. It was a terrific battle. And never was an enemy so defiant. To the last insect, they fought. A few planes had crashed with paralyzed pilots, or because a few had "bailed out," preferring a long drop to earth before pulling the parachute trip cord, rather than to face battle with such awful creatures.

The battle over, the remaining planes formed again into their squadron, a friendly wing-tip salute came from the enemy planes, and each returned to their own lines.

BUT it was in Paris and in Berlin that the major havoc was being wrought by the insects. Already huge spiders had spun gigantic webs between buildings and across streets. Men had been caught in the snares and drawn into the greedy monsters' larders. Ants crowded into subways, looking upon the subterranean railroads as ready-made burrows, tearing, slashing and killing as they went. Transportation was at a standstill. Tanks from the battlefronts warred upon the creatures who tore down wires, wrecked buildings and held the populace in a state of abject terror. Huge grasshoppers flitted across the cities, halting only to strip trees of foliage, or uproot choice shrubbery. Giant bees seized upon a convenient building and utilized the multi-storied edifice as a hive, sealing it with wax and honey. Food-warehouses were overrun with creatures who couldn't find enough to eat to fill their monstrous carcasses. Colossal caterpillers drew their tremendous bulks into hotel lobbies and gazed stupidly at the terror-stricken people who had sought refuge inside. Enormous, repulsive flies, carrion eaters of the insect world, proceeded to feast upon vanquished men and dead insects alike.

SLOWLY, the creatures spread into the smaller cities and towns and villages of France and Germany. Some of the winged creatures had already made their way across the channel into England. Other insects descended into Austria and even into Italy.

The terror continued for more than

a month. Thousands of people had been killed or had died as a result of insect attacks or of starvation when food supplies had been entirely cut off. All Europe was demoralized by the onslaught. Fighting between men had ceased; all implements of war was concentrated upon this new foe—the common enemy.

Slowly, normalcy returned. Nature alone knew how to deal with these creatures. Scarcely two months had elapsed since the advent of the insects and now not a single one lived. Those that had not been annihilated by man, died naturally at the expiration of their normally allotted span of life.

Doris Kingsley had made her way to the hotel after several days, and she, with the three men, remained in Paris as spectators of the horror they had liberated. The crushing aggression of the insects was far beyond the expectations of either the Professor or of Hardy, and, for a time, they feared that they had truly loosed upon the world a terror that could easily exceed the ability of man to handle.

Hardy spoke quietly and earnestly to Professor Kingsley in the privacy of their rooms, late one afternoon. The menace had passed from the immediate city, and the statesman's thoughts turned to his next move. Word had come through the newspapers that soldiers on the front-line trenches had ceased their battling and were even fraternizing, following their fighting side by side against the new enemy. Now came the time to utilize the insects for an everlasting good.

"You have seen," Hardy declared, "the initial activity of a Super-Police Department. . . ."

A MEETING of the League of Nations was called for the following week with the request that all nations, members of the Court or otherwise, have representative delegates in attendance. With few exceptions, all were present at the opening.

Hardy appeared, as a citizen of the United States—not as the official representative. By previous arrangement with the Ruling Board of the League, Hardy was permitted to address the delegates assembled in the Hall, at Geneva.

First came a confession that he was the sole cause of the invasion of giant insects. The delegates gasped in amazement and a hushed whisper swept the room. Then all became quiet as Hardy continued to speak.

"And here in this envelope," he continued solemnly as he held aloft a sealed packet, "is the secret for the creation of the monstrous insects that over-ran your home-lands. I present it to the League of Nations as its sole weapon of enforcement—the Police Department of the League of Nations! The horror that held nations in terror shall become the club of this assembly, to enforce its demands and to assure the execution of its rulings; to uphold the rights of the weak and amicably settle the disputes of the strong. This weapon is given into your hands in the name of Everlasting Peace.

"And further," he said in conclusion, "I want to impress upon all nations that defiance of the League, or the inauguration of warfare, shall again bring these hideous, mammoth insects to the aggressor's land—originating as tiny, crawling things, but becoming formidable beasts overnight. Throw down your guns! Destroy your battleships! Close up your munition plants! The Common Enemy shall build a new Brotherhood of Man!"

A strange, eerie silence held the room as Hardy slowly returned to his seat. There was no applause. No cheers. No

ovation. Quietly, the delegates arose and stood standing in tribute to a courageous man who had accomplished a courageous deed.

And the world also learned of the part that Professor Kingsley played in the procedure, as well as what Blake and Doris had done. The latter two were married upon their return to the United States. But such is the tribute of a nation's regard for its idols, that they were forced to live in a secluded section of an eastern seacoast town to escape the annoying, glaring spotlight of public adoration, so that there they might resume the course of their lives as normal, American citizens. . . .

They had saved humanity.

THE END

Science Questionnaire

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What was the ancient problem of the cubes? (See pages 6 and 7.)
2. How do the volumes of two spheres, one of which has twice the diameter of the other, compare? (See page 7.)
3. On what occasion did the Greek word *Eureka* originate? (See page 7.)
4. The usual translation is "I have found it"—What is the correct rendering? (See page 7.)
5. How many dimensions are there of space? (See page 7.)
6. Give the algebraic expression of an imaginary quantity. (See page 7.)
7. Are large or small containers the more economical in material of construction? (See page 8.)
8. What is the true mathematical "Pons" Asinorum? (See page 9.)
9. Is it the problem of the square of the hypothenuse, as it is often taken to be? (See page 9.)
10. What is the Meteus proportion for the determination of the circumference of a circle from its diameter? (See page 9.)
11. Who was Cheops? (See page 10.)
12. What might the point of view be as to the relation of size to the menace exercised by insects? (See page 39.)
13. Are the broadcasting radio waves reflected by any medium? (See page 56.)
14. What name is properly given to radio waves? (See page 56.)
15. Why are wild birds banded—marked with identification tags? (See page 69.)
16. How many asteroids are known to exist and where do they fit into our planetary system? (See page 76.)
17. Where are the asteroids' orbits in space? (See page 76.)
18. Are the true poles of the earth and its magnetic poles in the same places? (See page 77.)
19. What are the movements of the terrestrial poles? (See page 77.)
20. What is the arc in degrees and minutes from Dunkirk to Formentera, one of the Balearic Islands? (See page 105.)
21. Where did Arago locate the southern end of the arc of the meridian which he measured? (See page 105.)
22. What was the length in degrees and decimals of latitude of Arago's famous meridian measurement? (See page 105.)
23. How do the Africans cook elephants' feet? (See page 111.)

Hastings—1066

By L. B. ROSBOROUGH

We know that we are seeing stars to-day by light which left them centuries ago. We know that if people on those stars could see what was going on upon the earth they would see nothing of the present, but only the things of the remote past. Light traveling at 186,000 miles a second, with all space to gambol in, may play strange tricks if things could go as this story tells us they did.

Illustrated by MOREY

"BYRON"—Henry Carteret's eyes glowed with a fanatical light and his white goatee quivered with excitement, as he stepped toward his young visitor, emphasizing his words with a shaking forefinger—"within a few hours we shall see my knightly forbear perform the feat of valor, which raised him to a position of wealth and power in the councils of William the Conqueror. We shall see him, single-handed, beat off a horde of Saxons, who have fought their way through the Norman's bodyguard, and save the life of the Duke of Normandy."

Turning to the full-length portrait of a burly knight in full armor, looking out truculently from beneath the raised visor of his helmet, he apostrophized the spirit of his dead-and-gone kinsman:

"Lammot de Carteret, after the lapse of more than eight centuries, we shall see your trenchant axe, flashing in the sunlight and dripping blood, rising and falling with such fury, that your attackers shall break and flee in terror."

A look of incredulity verging on consternation overspread the young man's face.

"But, Mr. Carteret, what——?"

Carteret raised a placating hand and smiled thinly.

"No, my boy, I am not yet ready for the padded cell, although"—his words dripped venom—"my esteemed fellow citizens may think so. Riff-raff! Those who do not plume themselves on their crude democracy boast of their Mayflower ancestry. Fancy one's priding himself on his descent from a crew of imcompetent vagabonds, who left their native heath, hopeless and beaten, to live like starving peasants in a strange and savage land!"

Byron March fidgeted uneasily as he listened to this harangue.

"I'm afraid I didn't understand you at first. You have produced a motion picture of——"

"No, not that. I don't wonder at your amazement, but have patience; this machine"—crossing the room and placing his hand upon a large cabinet of curious design—"will dissipate your doubts."

Byron covered his uneasiness with a polite remark:

"That will be great—to see a fighter like Sir Lammot in battle," he answered lamely, but——"

"A doughty warrior, indeed. The

The spectators glanced uneasily at Carteret, who, however, smiled confidently and replied: "Have patience, my dear Whitman. The battle has only begun."

Norman sword was too light a plaything for him. See, in the picture he carries a heavy axe. "This"—taking the implement from its place on the wall—"this is the identical weapon which he used in that great encounter. Lift it."

Byron complied. "It certainly required a husky man to handle that."

"A man of iron," Carteret responded. "A man of vision, as well. Plate armor instead of chain mail—a visored helmet—such things did not come into general use until later. He was ahead of his time."

MARCH'S gaze reverted doubtfully to the cabinet.

"But how do you expect to see events that happened centuries ago? I have heard of time machines——"

"Nothing so fantastic as that. Our hopes are based on sound scientific principles. I presume you have some knowledge of radio, the speed of light, and such matters?"

"Rather sketchy, I'm afraid"—deprecatingly.

"Radio principles are not involved—I use that only as an illustration. The impulses sent out——"

Carteret paused and looked up as the butler announced Mr. Bruce Whitman.

"Show him in." The butler bowed and withdrew. Carteret grimaced.

"One of my democratic and somewhat impecunious neighbors."

Whitman entered—a quietly dressed man of medium build, whose face bespoke intelligence and considerable strength of character—normally calm, but capable of stubborn persistence in the face of opposition. Carteret presented March, adding:

"The son of my cousin and dear friend, now deceased. He will make his home here and enter my business."

Whitman's face relaxed into a smile as he took March's hand and looked into the youth's clear, gray eyes.

"A credit to your establishment and to your business, I am sure, Mr. Carteret."

The shadow of a frown flickered across the older man's features at this apparently innocent statement.

"I quite agree with you"—curtly. . . . "To what do I owe the honor of your visit?"

"Perhaps it would be better to discuss the matter privately."

"As you like." Carteret led the way to the library. . . .

Byron March had expected no such outburst, when he inquired casually about the portrait and received Carteret's explanation that the subject of the painting had fought at the battle of Hastings on that memorable 14th of October, 1066, when the Duke of Normandy scattered the forces of King Harold and established himself as ruler of England.

Now he scanned his surroundings curiously—a suit of armor in one corner, ancient weapons, incunabula and old wood-cuts, done in the awkward style of the medieval artist—battle scenes reminiscent of those depicted in the Bayeux tapestry. Evidently Cousin Henry's interest in the lore of the Middle Ages amounted to an obsession that had reached the proportions of a mania.

The conversation of the two in the library floated back to him at first as a murmur without significance. Then Whitman's voice rose as he emphasized a point of the argument:

". . . deliberately depressed values . . . filched my ideas. . ." The rest was indistinguishable.

PRESENTLY through the doorway he saw them come into the hall, Whitman grim and angry, Carteret cynically polite. The latter opened the door, bowed his visitor out, and returned to where Byron waited.

"Whitman allows his imagination to run away with his judgment," he observed. "He has been experimenting along the same lines, but lack of funds has held up his work. He charges me with buying up a company in which he was interested and wilfully depressing the stock to impoverish him and hamper his experiments—even going so far as to say that I got my ideas from him. Absurd, of course. Probably he in some way obtained access to my plans and tried to develop them himself.

"No discretion—no background—a man of common ancestry. . . . Not even a Mayflower in his family tree," he added sarcastically.

March glanced up at the wall. Carteret's expression resumed its air of animation.

"You have been examining the old wood-cuts? That lot pictures the town of Hastings at the time of the Conquest—the surrounding country—battle scenes. Hastings is my hobby."

"You had started to explain the theory of your magic machine."

"Yes. We started with the radio analogy. The impulses sent out from a broadcasting station are called Hertzian waves, after their discoverer. Some of them, traveling outward, encounter a reflecting stratum—the heavyside layer—and rebound to earth. Beginning at this point, I reasoned that light, having the same velocity as the radio waves, might be similarly affected—if not by the heavyside layer, then by a similar medium far out in space.

"It has been no easy task. Mr. Meadows—an engineer in my employ—and I have slaved night and day. And now this impudent rascal, Whitman, claims we stole his invention!"

"Crust!" Byron commented tersely. Carteret chuckled.

"But we proved our point. We found the light-reflecting layer surrounding our universe at a distance of 433 light years—a small matter of two quadrillion five hundred forty-five trillion miles—a million millions multiplied by 2,545 *plus* a few odd billions!"

Byron gave a low whistle, then: "Light years? I have almost forgotten the little astronomy I learned."

Carteret explained: "A light year is the distance traveled by light in one year. Light continues indefinitely, you know. Many of the stars which we see are hundreds or thousands of light years away. In short, their light, reaching us now, started on its journey years ago."

"But how do you apply that principle here?" March asked. How do you expect to see something that happened on the earth hundreds of years ago?"

CARTERET'S eyes beamed with satisfaction at his pupil's apparent interest.

"As you know, we see ordinary objects by the light which is reflected from them to our eyes. Light reflected from the earthly scene 866 years ago sped outward to the reflecting stratum—shall we call it the Carteret layer?—was reflected back from that vast, globular mirror, and comes to earth again—433 years each way! Do you see?"

"I get the theory, but it seems beyond belief."

The old man chuckled. "Well, my young Doubting Thomas, I'll not hold that against you; but by to-morrow night, you shall be convinced. Meadows has some few adjustments to make; and the device should be in perfect working order to pick up these feeble, reflected rays and put before us a view of the world in 1066."

When March retired to his room for the night, he was careful to see that the door was securely fastened, feeling that

a substantial lock was more to be trusted than the vagaries of a mind which wandered among the scenes of a dim and misty past. On the borderland of sleep, the thought of Whitman intruded itself into his mind . . . hard to think of him as the undependable character which Carteret had painted . . . cultivate Whitman's acquaintance . . . feel his way about . . . carefully, though . . . carefully . . . until he got his bearings. . . .

Bruce Whitman, fuming inwardly, returned home. His home now—but for how long?—with his modest means depleted through the machinations of Henry Carteret and a lien on the premises in the hands of the bank, whose policies must be shaped with an eye to the approval of the local leader of industry. Damn Carteret and all his works!—his cheap pretensions to aristocracy—his endless scheming for more power and notoriety. Not satisfied to be monarch of all he surveyed, the old pirate must reach out his meddlesome hands and rob him of the fruit of years of work—with Meadows' help.

Meadows, now . . . not a bad fellow at heart—just another pawn in Carteret's game. He would see Meadows at the first opportunity. . . .

A NIGHT'S sleep soothed his ruffled feelings, and, without a very definite idea as to what he expected to accomplish, but feeling that no stone should be left unturned which might reveal useful information, he made an early morning call on Carteret's assistant.

"Bill, how long are you going to be a partner in Henry Carteret's crimes?" A bantering tone took the edge off his words.

"Easy! You're talking treason against the king. Maybe I don't approve of everything he does, but I do have an aversion to seeing my family in the bread line." Meadows' face sobered. "But I *am* almost at the end of my tether. The old devil has driven me frantic in the last few weeks—gone completely loco on the light machine—irritable—unreasonable. I've been tempted more than once to smash the apparatus. If he doesn't calm himself, that bum heart of his will stop suddenly some day."

"Which wouldn't be a cause for general mourning," Whitman cut in. Leaning forward, he added earnestly: "Bill, I *know* he stole the idea from me. Isn't that true?"

Meadows looked uncomfortable. "What you know, you know. You understand my position. While I am in his employ——" he ended with a shrug. "I will say, however, that no papers have been filed with the patent office—not even a *caveat*. He felt that secrecy would be better protection during the development stage than an application for patent."

"I thought the same," Whitman replied. "The publicity of a patent, without ample financial backing, merely invites infringement. But someone discovered my secret."

"The thing is about complete now," Meadows continued; "I hope his demonstration to-night will be satisfactory. If it isn't, there won't be any getting along with him."

"To-night?"

"Yes. We have definitely located the reflective stratum and got some glimpses of the earth—southern England—Hastings, he says, about the time of the Norman Conquest. If I can get the reflector plate to operating reliably, he'll put on a show. Hopes to give the admiring citizens a look at his dear, old ancestor in action."

"Perhaps I could help out on the reflector if necessary," Whitman suggested.

"I don't suppose I could hope for an invitation, though."

"I think you can. It will be his chance to do a little gloating. You're a history shark—it ought to be interesting to you."

"It would." Whitman smiled thoughtfully. "Hastings, eh? Yes, I know a little history—perhaps even more about that Hastings affair than Sir Henry himself. I'd be glad to give him a chance to gloat."

Whitman went home to brush up on his historical knowledge by the reading of some old documents recently received, while Meadows drove to the Carteret home and immersed himself in the work of making final preparations for the coming exhibition. By mid-afternoon, March found his opportunity to interview Whitman. Carteret, who had been busily engaged with Meadows, came to him and said:

"Byron, things are coming along splendidly. We shall make this a gala affair—have some of the executives from the plant come over—several of the business men from town—Dr. Sharp, of course—and I want Whitman here." He smiled maliciously. "I *particularly* want Whitman. He seemed to like you; go over and see him—smooth him down—try to get him to come. I believe his curiosity will get the better of his bad temper."

Byron found his task unexpectedly easy. Whitman's promise secured, he broached the subject uppermost in his mind:

"Mr. Whitman, I don't like it. He'll make a holy show of himself airing his wild ideas in public. Is he . . . well, is he entirely sane?" he finally blurted.

"Sane enough in that respect, at any rate. I don't know just how far he has succeeded, but the idea is sound."

March left, still in doubt. Whitman appeared rational enough, but the thing was out of all reason—simply couldn't be done.

Whitman turned again to the documents on his desk, and, after a little further study, folded them up with a smile of satisfaction and placed them in a drawer.

WHEN he appeared at the Carteret mansion that evening, the little company had already assembled. Carteret greeted him blandly and showed him to a chair. Meadows, his worried face a picture of suppressed irritation, tinkered with the projector. The buzz of conversation ceased as Carteret rose to address his guests:

"We hope to give you the privilege, within a very short time, of looking back through the pages of history almost a thousand years—not at a motion picture with mere puppet players, but at the actual deeds of flesh-and-blood characters, seen through the vast celestial mirror which surrounds our universe."

Explaining briefly the theory, as given to March, he continued:

"The heart of this machine consists of two parts—one of which we call the filter-reflector plate, and the other the intensifier plate. Each is made up of two sheets of quartz glass set closely together in a frame enclosing a combination of gases through which a current of electricity can be passed. You are all familiar with the neon electric sign, in which the passage of the current causes the gas in the slender tubes to glow with colored light. In our filter-reflector plate it gives the gas the property of reflecting certain rays of light. With the proper voltage, the plate will reflect only the very weak rays coming back to us from space as I have explained, and permit the strong, visible beams to pass through.

"These weak rays are thrown upon

the other plate, which intensifies them to a point of visibility.

"Sets of delicate lenses at the receiving and projecting ends, and focusing controls for increasing the field of vision, or decreasing it to give a sharp, close-up view, complete the apparatus."

Meadows made his final adjustment, and, at a word from his employer, threw in the switch. A whisper of excited comment ran through the assemblage at the sight which met their gaze. Spread before them lay a circular section of countryside bathed in sunlight. Cutting into the picture on one side appeared an orderly arrangement of lines and squares recognizable as the outskirts of a town. Meadows turned the concentrating knob, and the scene narrowed, while the details enlarged and stood out sharply.

"Hastings," Carteret gloated. "Medieval Hastings."

Meadows moved the circle of visibility across the country and again sharpened the focus. Carteret's voice chattered on:

"THAT is Senlac Hill"—and, as the scene came nearer and grew more distinct—"an army encampment—see it? The English army of King Harold!" The circle shifted to the left of the army's position. "There—the king and his bodyguard—the hus-carls—the banner of the Golden Dragon of Wessex, and the king's own standard."

The circle moved slowly about, revealing the guards in their chain mail, armed with the long Saxon battle axes; the horde of rustics carrying clubs, scythes, and every manner of rude weapon, hastily gathered together by Harold in his dash southward from Stamford Bridge to meet the Norman invaders; and far to the right the abrupt falling away of the hill to the marshes which protected the army's flank.

Alternately reducing and increasing the field of vision, Meadows swept it across the country to the mound of Telham, where the army of the Duke of Normandy—soon to become William the Conqueror—had taken up its stand, the Bretons on the left wing, mercenary troops on the right, and William with his knights and archers grouped around the Papal standard in the center—the knights in chain armor and conical helmets with nose-pieces similar in appearance to the accouterments of the hus-carls of Harold, but carrying lances and swords instead of axes.

In the group immediately surrounding William was one exception—a knight of great stature encased in plate armor, wearing a helmet with visor adjustable at will, and armed with an axe. Carteret gripped the arm of Whitman. "Look! Lammot de Carteret!" He shook Whitman's arm. "Do you recognize him?"

"Undoubtedly your *noble* relative."

The scene flickered and faded. Carteret exclaimed impatiently, and Meadows fumbled with the controls in an effort to clarify the image.

Whitman laughed maliciously. Carteret threw him an angry glance.

"What's wrong, Meadows?" he asked.

"Unstable gas mixture in the filter-reflector plate. I told you——"

"Rectify it. Clear up the scene."

When the picture reappeared, the Norman camp was bustling with plans for the attack. Carteret took Meadows' place at the projector and again addressed the audience:

"Gentlemen, you are about to look upon a scene which no mortal eye has beheld in more than eight centuries—the battle of Hastings, or Senlac, which occurred 866 years ago. In this engagement, my ancestor, Lammot de Carteret, distinguished himself and gained the special favor of the Duke of

Normandy." He crouched behind the machine, his glowing eyes fixed on the screen.

A lone horseman rode out from the Norman ranks, tossing his sword into the air and catching it dexterously as it fell, followed by the foot soldiers from both flanks of the army.

Carteret's eager voice broke the silence in the room: "The man on horseback is Taillefer, the minstrel, singing the battle song of Charlemagne and Roland."

"Your illustrious ancestor is to be congratulated on his judgment, Mr. Carteret," Whitman said blandly, "He tempers valor with discretion."

The spectators glanced uneasily at Carteret, who, however, smiled confidently and replied: "Have patience, my dear Whitman. The battle has only begun."

THE charging host swept across the intervening space and came to grips with the English. Taillefer was the first to fall, toppled from his horse by the sweep of a long-handled axe. The foot-soldiers closed in on the chain-shirted warriors surrounding King Harold. Axe met sword in a wild orgy of battle. The left wing swarmed across the trench and against the stockade which sheltered the rest of the English army, only to be brained by the clubs of the rustics or cut down by their scythes. The rear ranks pressed forward, climbing over the bodies of their slain comrades. But the stubborn resistance was too much for the attackers, who at last fell back, leaving a windrow of dead before the English line.

With the return of the foot-soldiers, the Norman knights spurred their steeds forward in a thunderous charge. Lances splintered against the long shields of the hus-carls, planted firmly side by side, to form a wall as impregnable as the barricade which protected the peasant soldiers—an obstacle which they could not pass. Thrusting with lance and hewing with sword, they beat against the barrier like waves against a cliff. Axe, spear, scythe and sickle struck back at them, shearing down horse and rider, until they, too, were forced to withdraw.

From time to time Carteret shifted the view back to the mound of Telham, where William sat on his horse, scanning the field of battle, surrounded by a small group of knights, among them Lammot de Carteret. Finally Whitman cleared his throat and commented suavely:

"Sir Lammot appears to have definitely aligned himself with the home guards."

"Quite naturally he belonged to that select group chosen by the Duke as his bodyguard." Henry's unctuous retort brought a dutiful laugh from his retainers.

"So I see. An excellent job—and a safe one, apparently."

Wave after wave surged across the shallow valley and up the slope of Senlac Hill, to crash against the English front and roll back in confusion. The shadows on the battlefield shortened and began to point eastward.

The hours passed unnoticed by the watchers in the laboratory, who sat enthralled by the spectacle, silent except for an occasional sharp ejaculation at some particularly thrilling episode—hearing in fancy the trampling of the horses, the clash of arms, the shouts of the combatants, and the groans of the dying. On the English right, the Breton troops composing the left wing of William's forces, became entangled in the marshes. The entire army appeared to waver.

Carteret brought the full amplifying power of the instrument to bear on the

spot where William had rallied his knights around him.

"Whitman," he called out, "have you noticed the very active part that Sir Lammot has been taking? Do you see him now in the very thick of the fray?"

Whitman laughed. "He has been doing rather well. Perhaps some of that good Norman wine has steadied his nerves."

THE Duke closed the visor of his helmet, lifted his heavy mace, and led his followers in a whirling charge directly at the position occupied by Harold and his guards. The galloping horsemen struck like a thunderbolt. William's charger went down, and the Duke leaped clear, almost at the feet of King Harold. A huge Saxon raised his axe; before it could fall, the Norman brought his mace crashing on the skull of his adversary.

"Gyrth is down—the brother of Harold is killed!" Carteret chattered.

Duke William seized another mount. The attackers were borne back. Again he was unhorsed. Then the little audience in the laboratory saw Lammot de Carteret turn his steed and urge it frantically back through the crowded ranks behind him. William held up a hand, but the rider spurred past and dashed away. Two mounted knights blocked his path and grasped the bridle of his horse. The Duke strode back and faced him. Panic-stricken, de Carteret struck out viciously with his mailed fist, and the next moment was dragged down by the enraged commander, who vaulted into the saddle and, with a gesture to the captors of de Carteret, turned his attention to the conflict. The pair seized the rebellious knight; a short, fierce struggle ensued, and he was subdued and led away.

Whitman's laugh now was mocking—malicious. He turned to speak to Carteret, but checked himself. In the dim light, the old man's face seemed haggard, his body shrunken; his eyes, so full of fire a moment before, dull and listless. But he stuck to his post, turning the focusing control so that the scene receded until the figure of his disgraced ancestor was lost among the thronging troops on the field of battle.

The Normans began to retreat, and the half-armed rustics, scenting victory, swarmed down from the crest and spread over the slope in pursuit. William continued the strategem until his foes had scattered over the plain and the Norman forces had been brought together. Quickly the invaders re-formed and turned upon their pursuers. The fighting increased in violence, with the Normans pressing the attack and the English resisting every step of the way.

Henry Carteret swept the field with the magic circle of visibility and scanned the screen anxiously, but the figure of Sir Lammot was no more to be seen.

Gradually the remnants of the band of foot-soldiers were pushed back over their broken stockade, and the Normans, following closely, swept them from the hilltop and scattered them like leaves before the wind. Three o'clock on the field of Hastings, and the hill was won. But Harold, with his armored veterans, still held his position at the left.

A clock in another room of the mansion boomed the hour of midnight. The butler brought food and drink. Carteret silently took the glass offered him and drained it.

"Better lie down and get a little rest," March urged.

Carteret gestured impatiently. "No, no; I must see the finish of this. The chance will never come again." He turned back to the controls.

Whitman yawned. "I am anxiously awaiting the return of Sir Lammot."

CARTERET glanced around angrily, but made no reply. Members of the gathering who had more than once smarted under his caustic words or resented in secret his intolerable assumption of superiority, discreetly suppressed smiles of satisfaction.

HAVING rested his troops, William moved against the position where Harold and his surviving retainers waited behind their ring of shields. Six hours of fighting had not broken the spirit of the defenders, and at each onslaught their axes took a heavy toll of the attacking horde. Wearying of his fruitless efforts, the Duke fell back. His archers came up within bow-shot and released a cloud of arrows. With no means of retaliation, the English crouched behind their fence of shields while the hail of feathered shafts beat upon them. Gaps appeared in the wall as arrows found their way through the barrier and struck down the men behind it.

The shadows lengthened, and the scene took on the rosy hue of evening—the end of the day was at hand, and with it the end of the line of Saxon kings. Harold stood up, raised his axe, shook it defiantly at the besiegers. A shaft pierced his eye, and he went down. The shower of arrows stopped abruptly; the Norman horsemen again plowed into the broken ranks. A swirling fury of conflict raged for a few moments over and around the body of the fallen leader; then the few survivors broke and fled down the hill and into the forest.

Once more the screen went dark. One of the members of the group looked at his watch. "Three-fifteen! I had no idea it was so late." He suggested leaving, but Carteret objected:

"No, no; we'll soon have it again."

Whitman spoke to Meadows and left the room, returning several minutes later with a large, square package which he handled with extreme care. Carteret by this time had worked himself into a frenzy at Meadows' failure to get the projector into operation. Meadows stepped back from the apparatus.

"I'm through," he said quietly, his voice quivering with anger; "from now on, you'll have to handle your stolen invention without my help."

A dead silence settled over the room. The startled eyes of the audience were fixed on the two. Carteret gasped and attempted to speak; pressed his hand to his heart and sank into a chair. Whitman stepped forward and faced the gathering.

"YOU have heard what Mr. Meadows has said. It is true. The invention is mine. With all his resources, Mr. Carteret has not been able to bring it to perfection. I have here a filter plate built in my own laboratory with my limited means. Possibly we shall still be in time to see an incident which will be interesting to you—and"—smiling ironically in the direction of his host—"to Mr. Carteret."

With the installation of the new plate, the screen came to life.

William of Normandy had had a tent erected and was sitting in front of it. Before him stood Lammot de Carteret, his helmet gone, hands bound behind him, a guard on either side. William gestured; the guards seized the prisoner's arms and dragged him away, struggling desperately, to a tree standing nearby. A rope was placed around his neck and the end thrown over a limb.

Again Whitman's sharp, triumphant laugh broke the stillness. Carteret uttered a choked cry, struggled to his feet, and tottered across the room to the

portrait. Livid face contorted with passion, he snatched an ancient sword from the wall and slashed the painting repeatedly. At once the room was in an uproar; the spectators sprang to their feet, overturning chairs in the general confusion.

The canvas was reduced to shreds. Henry Carteret faced about and glared around the room. Whitman, with Meadows' help, was retrieving his own property—removing the loaned reflector plate from the machine.

"Whitman . . . Meadows . . . plotters——" Henry's voice rose high and shrill. "I'll——"

He started menacingly toward them. The by-standers closed in on him—wrenched the sword from his hand. He pushed them aside, seized a chair, and brought it down again and again on the projector, reducing it to a mass of wreckage. Before the others could recover from their astonishment, he crumpled to the floor.

Dr. Sharp knelt at his side. Silence again. The physician looked up and spoke briefly to Whitman and Meadows, who stood by. Whitman turned and raised his hand.

"Gentlemen, Henry Carteret has gone to join his illustrious ancestor."

THE END

A Science Pacifist Poem of 1867

How far it ennobles a man to live in a trench of indescribable dirtiness, his person in a condition of desperate insanitation—which condition can also be assigned to the indescribable class—is not open to classification. War in ancient days was largely a hand-to-hand combat, calling for the exercise of great personal courage. The old-time warrior, complaining of the shortness of his sword, was told by his mother to add his arm to it. The bow and arrow, the sling and the javelin gave a limited increase to the range of action. But modern war with a range of miles instead of yards, where a hole in the ground takes the place of the old-time fort, is far more horrible than the war of even a hundred years ago.

The little poem given here was written in the year 1867 by a boy on his sixteenth birthday. It was written as a college exercise. His father would not let him hand it in. He had to write another, of the common garden variety, on the same subject.

Love of Country

Should love of country e'er the poet inspire?
Should it e'er warm the hero's breast to fire?
If men are equal and if brothers all,
Can it be right for country's love to fall
Dead in the field of strife, to keep the name
Of one small region from defeat or shame?
No men are equal, work for all mankind,
Pursuing knowledge leave all bounds behind;
For science spreads wide over all our sphere,
Diffuses light to all both far and near;
It benefits one region not alone,
But spreads over all the earth, through every clime and zone.

Subjugating the Earth

By WALTER KATELEY

We have had stories by this author in preceding issues of AMAZING STORIES *and we are glad to see his work once more upon our pages. The story, which is quite ingeniously carried out, is not wanting in the elements of excitement and tension, and we are sure that it will be appreciated by our readers.*

Illustrated by MOREY

THE ice was much thicker than usual, and the chippings, thrown up as I chopped, fell on the smooth snow and slid back persistently into the hole.

We had cleared away the snow at this fishing hole so often, that it was now piled into a high rim and formed a deep crater.

Laying aside my small trapper's axe I knelt to clear away the loose ice with my mittened hands.

Bitter experience—bitter cold experience—had taught me that the thing to do was to make the hole full size from the start, being careful not to chip through until there remained but a thin layer that could easily be broken away; because after the water had surged up, as it always did when covered with heavy ice, it was exasperatingly difficult to do any more chopping.

In the Arctic cold one avoids splashes of water, since they may easily mean frozen spots on the face or frost-bite from damp clothing.

With a double handful of chopped ice I raised my head to look for a low place in the rim over which to throw it.

But I never threw it.

Through the mist of drifting snow and in the gloom of white starlight, I saw a sight that arrested all normal action.

My first thought was that it was some strange sort of insect with wings. Next, that it was some kind of man with a flying machine.

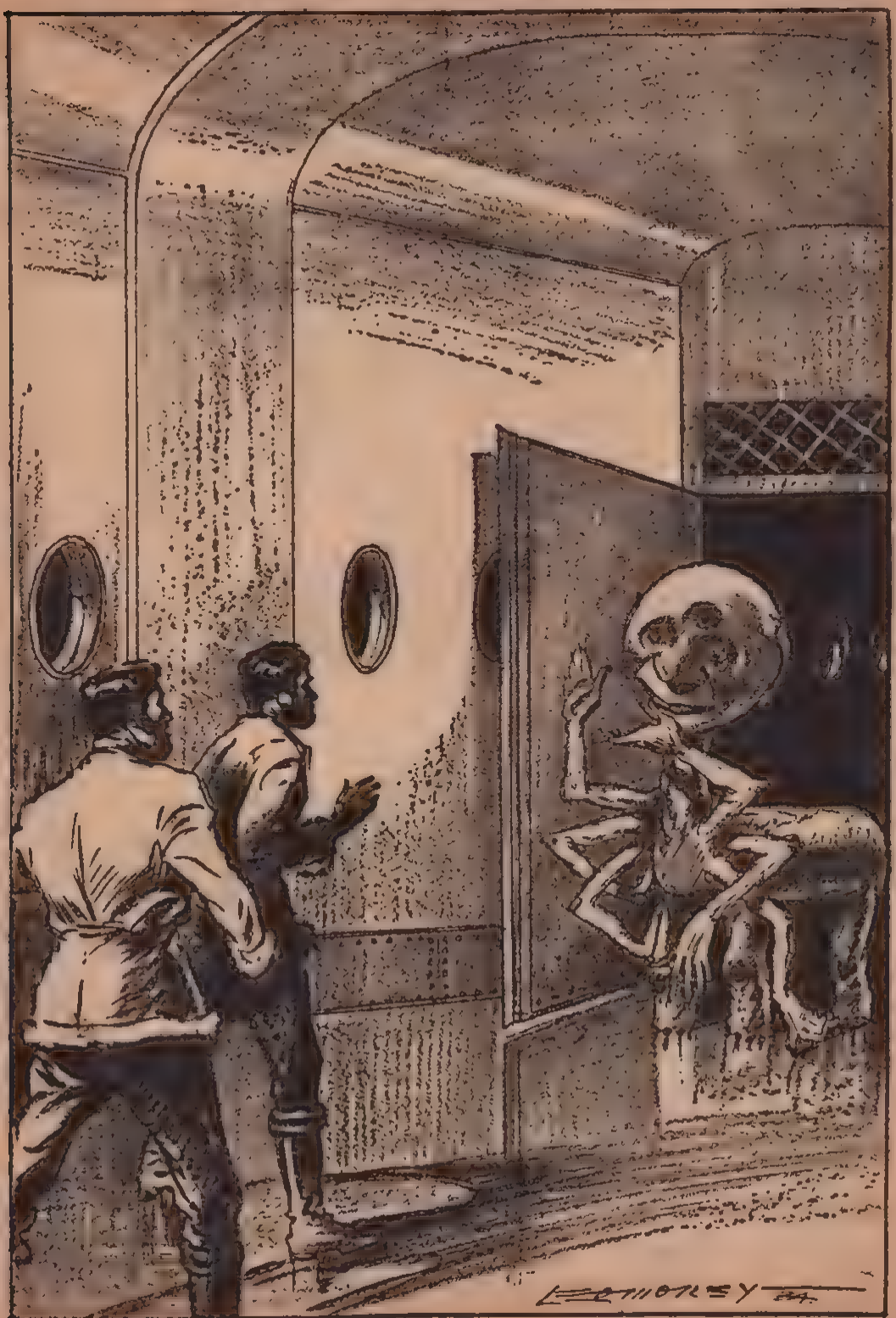
The body and limbs seemed to be wrapped in heavy clothing, and the great round head was thickly hooded. But out of the hood three bright eyes were looking down at me very intently. There was an eye above and two below in a triangular arrangement.

The body, tall as a man's, seemed to be provided with half a dozen arms; or were some of them legs? They were so intermingled with the parts of the flying apparatus that it was difficult in the gloom to make out where limbs left off and machinery began.

Then below, and almost resting on the snow was a large, bulbous looking member that might, I thought, be either a part of the creature's body or the body of a mechanical flyer.

Four wings stood out behind, in shape somewhat resembling those of a dragon-fly (devil's darning needle); but I thought I detected a metallic sheen, and above the swish of the north wind I heard, or imagined I heard, the hum of a small motor.

The apparition was so weird, so alto-



Corn let out a gasp of astonishment and stood staring, as I did, in bewildered surprise. It was, I realized, another individual such as I had seen at the fishing hole.

gether unearthly, that I doubted my own eyes.

Could this be some strange and unknown Arctic insect?

Could it be a man, an explorer, with strange goggles and a stranger flying machine? Or even a creature from some other world?

Or—worse thought!—was I just seeing things? Seeing things, as men are said to do, when the nervous strain of wild and waste places has unbalanced their minds?

I closed my eyes, fearing that I would see it still. But it was gone, and all dark. I hoped it would still be gone when I opened my eyes.

I had been afraid that my mental health might suffer, what with the close confinement, the limited diet and the awful wastes of the surrounding vastness; and, though neither of us ever spoke of it, I felt that my partner was also beset by an ever-present dread.

YET a few seconds' reflection convinced me that, since I had suffered no ill-health or fits of despondency, my mind must still be normal. Mental derangement could not come upon me suddenly like this!

Although we had not supposed there was anything more human within several hundred miles of us than a polar bear, yet, whatever this thing was, it must be real and must be faced.

As I opened my eyes and stood up, it was still looking down at me.

"Hello!" I shouted. "Who comes?"

There was no response.

The creature only shifted its position a little to the left, as though to get a better view.

And now I saw that the three eye-objects, which I had thought might possibly be some sort of goggles, were indeed real eyes; for the great one, which was several times as large as my own, moved unmistakably.

I felt a little foolish; and, not knowing what else to do, I picked up the little axe and waited.

I had not long to wait.

Presently long wings came into view, commenced to vibrate silently, and the creature lifted and flew away.

Scrambling up the steep bank I peered after him as he rose in the gloom to become a silhouette against the cold sky and fade quickly in the distance.

For a moment I stood motionless in the deep snow, undecided what to do.

Should I call to my companion at the shack? Should I go and tell him of the strange apparition? I hesitated to do either.

Would it not strain his credulity? Would he think I had really seen anything, or would he think I was only slipping mentally? Would I have believed it, if he had told of seeing such a creature? Would it not be better to say nothing of it, since there was no tangible evidence to back up my statement. But there *was* evidence. Tracks in the snow.

They started in the loose snow a rod from the fish hole; two rows wide apart and a smooth trail in the middle, like a sea turtle's track up a sandy beach.

In an instant my mind was made up. I would hurry and get my partner, show him the tracks and explain all afterward.

I knew he would be busy with what we called the "civilization act": washing up the one tin plate and the two aluminum cups and tidying the igloo-shack (euphemism for sod, rock and snow den). This we always did religiously every day, in the same spirit that the Englishman, in far-away Government posts and amid only primitive natives, always dresses for dinner.

As I turned I heard a crunching step

in the snow and saw Corn—his real name was Cornwallis—straddling along in the foot-prints I had left.

Evidently he had decided that he needed some liquid water, and had come out with the larger cup, thinking I would have finished cutting the ice away.

While my bewildered brain was groping for words to start my tale, he called out: "What was your friend?"

"Oh, did you see it, too?" I was very consciously relieved.

"Just caught a glimpse as I opened the door. Saw something big fly up—too dark to make out. What was it?"

"I don't know," I replied. "Come and look at the tracks."

"Didn't you see it, close up? Weren't you right here? What are you looking at the tracks for?" he asked all in one breath.

"It was something queer—unearthly," I told him. "I'll tell you all about it—I didn't know you had seen it, and I just wanted to make sure——"

HE was examining the tracks, but he straightened up and looked at me quizzically.

"Oh, oh; I see," he said; "you didn't—you weren't quite—quite sure. . . . Was it so strange as that?"

"Well, I'm glad you saw it," I said. "Let's get in out of the cold and I'll tell you about it."

Inside, I fastened the low door and described as best I could what I had seen. When I had finished, Corn sat a moment meditating.

"Well, Jeemses River!" he ejaculated at length. "I wouldn't know what to think about that!

"Unless—unless—it might be some flying ant that some doctor or scientist has let loose after performing operations on the glands that produce giantism."

"Oh, no. That couldn't be," I said. "Flying ants only fly a few days in the summer each year. Anyway, what would an *ant* be doing up here in the Arctic?

"This thing I am sure was wearing wraps of some sort; and I don't think I could be mistaken about the flying apparatus being mechanical."

"Well, maybe you're right," Corn admitted. "Of course I didn't get much of a look at it. Did it look fierce or threatening?"

"No, I thought not. Only curious and interested——"

"What do you think it is?"

"Well," I answered with some hesitation, "it didn't seem to me like anything earthly. I am almost inclined to believe it was a visitor from some other world or something."

Corn gave a long-drawn-out whistle.

"Most anything is possible," he admitted; "but if that thing is only visiting the earth, it must have rotten poor judgment to stop in this place that God forgot."

"Anyway, I suppose if he is interested, he will come back," I reasoned.

"Yes," agreed Corn, "and maybe bring some of his little playmates with him. It's too bad we haven't more room to entertain," he finished with a little whimsical snort. "Do you suppose they might happen to have any tea over to their place?"

"We'd better not go out without the rifle," I advised. "No," he answered soberly. "It can do no harm to be careful."

After discussing the matter a while longer he went back with me to the fish hole and stood guard with the rifle, while I fished; but it was too cold to stay out long, and we were obliged to go home without any fish or any further adventure.

Back in our den, after making my daily entry in the note-book and ending it with a great question mark, I sat

long pondering over this strange event. It seemed even stranger than the adventure that had brought us here and the misadventure that had forced us to stay.

* * * * *

In the early Spring Corn and I had set out to the Far North to visit the nesting grounds of the eider duck, in the interests of the International Audubon Society.

First by rail, then by airplane, and finally by boat we had penetrated far into the Arctic; far beyond even the farthest northern mining outposts of the great companies exploiting the newly found riches of the wild frontier.

IT was in fact at one of their outposts, accessible only by airplane or light boat, that we fell in with the hardy half-breed prospector who was reputed to know more of the wilds beyond the Arctic Circle than even the Arctic owls.

He had imported a little motor by airplane and built a small boat near the northern limits of timber and come on down the river, stopping at Little Grass Camp to take on a supply of gasoline in sealed tin containers.

He was bound in the direction we wanted to go; and when we offered to pay a fare and grubstake him, he boosted his price as high as he thought the traffic would bear and accepted.

He was going to a region he had never visited; but had seen once with a long-range glass. He couldn't promise us that there would be any eider ducks nesting there, but he thought it a very likely place. At least, if there ever had been any there, they had never been disturbed or driven away; for no one, not even an Indian, had ever been there, so far as he could find out. It ought to be virgin soil, both for his prospecting and our hunting.

He seemed an intelligent and capable fellow, and we lost no time in bundling our meagre equipment on board his boat, together with a couple of bales of provisions which we bought under his direction.

Day after day we floated or motored down the low-banked, sluggish streams; or, hoisting a sail to save fuel, tacked in and out among the low-lying coastal islands; until at last after nearly a month we turned up a smaller stream that Zak—whether that was his first or his last name we never knew—declared must lead to the region we had come to explore.

We had found the fellow a very agreeable traveling companion, possessed of a surprising knowledge of wild nature and frontier lore.

His only really distressing failing was the careless way in which he handled his firearms and the stock of stick dynamite he carried for use in his prospecting.

HE seemed to have no conception of the ordinary and reasonable precautions that to us seemed quite essential. We were not backward about telling him so, but he failed to understand all we said or else he did not care.

Presently we came to where the landscape was a little more rugged, and where there were tufts of grass and a great deal of reindeer moss; and, most important of all from a naturalist's standpoint, a number of wild ducks flying.

Here we made camp and set to work; Corn and I with our traps and gun, and Zak with his prospector's outfit.

He made several overland trips into the rougher country, while we searched with fair success for the nesting places of the wily ducks, securing specimens

of nests, eggs, young and mature ducks, and much data on their habits.

One day—at this time of year it was daylight throughout the twenty-four hours—we went down the little river and along the coast a few miles, intending to return to the camp at night.

While we were engaged in attempting to net some half-grown ducks on the shore, in order to band them,* Zak prospected a rocky island not far out.

Toward night we saw Zak start back toward shore.

The waves were choppy, but the wind was with him, and we anticipated no trouble.

Then suddenly when he was half-way over, there was a heavy detonation and, looking up, I saw a cloud of smoke roll up from the boat and almost instantly the boat sank out of sight.

"It's the dynamite," shouted Corn, from a few rods down the beach. "He must have exploded it!"

He came running up to where I was standing, and together we stood, shading our eyes and peering out over the water.

There was no trace of anything save the waves.

"I'm afraid he's done for," I said, and my voice sounded hollow and far away. "I wonder what happened."

"Maybe," said Corn, also in a tragically husky voice, "he was getting a charge ready to 'shoot' fish.

"Or maybe his gun discharged accidentally and set it off. Anyway, we are lucky we weren't out with him."

"I don't know about that," I replied pessimistically, "our situation is not much better. What are we going to do?"

"I don't know," admitted Corn, turning and looking dismayed at the dreary landscape. "But we shall carry on," he said stoutly.

We waited a day, hoping for what the waves might deliver; but there was absolutely no trace of either our guide or his boat. So we treked back to camp.

HERE we took account of stock and of our predicament. We had a tiny tent, some preserving chemicals for specimens, our guns and traps and a small supply of provisions, mostly raisins and canned fruits. And the nearest human being, so far as we knew, might be five hundred miles away. There was no boat, and nothing with which to make one.

To make matters worse, the very day we got back to camp, and before we had recovered from the exhausting trip, Corn met with an accident.

We saw some wild geese alight not far away, and Corn hurried out with the rifle—we had but one rifle and a small-gauge shotgun. He managed to wing one, and, in chasing the wounded bird over rough ground, he sprained his ankle so badly that he could barely hobble back to camp.

In spite of our best efforts in caring for the injury, the leg became badly swollen and inflamed; and it soon became evident that a tendon must have been dislocated or torn loose, and that Corn was in for a long siege of inactivity.

We had planned to take what we could carry on our backs and start south overland. Winter would be upon us presently—there had been already a flurry of snow; the birds would all be gone south, and there would be nothing to live on, while crossing the hundreds of miles of wilderness that lay between the low coast and the timber line. Now it seemed our only chance was to spend the winter here, and in the spring, when

* Thousands of wild birds have been banded with identification tags during the last decade, or more, in order to study their migration and other habits.

Corn should be well, to make an early start.

It was a dreary prospect; but I set to work to make what preparations were possible.

I was able to get a few ducks and geese (it was now cold enough, so there was little danger of their spoiling); and after gathering a small supply of the meager growth of peat and moss for fuel, I turned my attention to building a shack of stones and sods.

A trip to the seashore and an all-day search there yielded but a few pieces of driftwood and a piece of heavy board, evidently from the superstructure of some wrecked boat. It was only four feet long, but it had to serve for a door.

The ground was frozen before I could get the walls up, and the snow was soon a foot and more deep. So I was obliged to resort to blocks of snow to finish the walls and roof.

Meanwhile Corn was slowly recovering, and presently he was able to lend a hand.

By this time the noon sun barely appeared above the horizon, and almost immediately the long winter night set in.

From then on our only outdoor activity was fishing through the ice of the small stream and often the weather was too cold and stormy for days at a time for us to do even that much. Fortunately, as an emergency measure, we had brought heavy coats, mittens and very heavy woolen socks.

But sixty or seventy below zero temperature and a snow-laden wind are not to be braved with impunity.

The heavy blanket of snow was all, I presume, that saved the ten feet of river water from freezing solid and killing all the fish.

Ours was a dreary life.

The only redeeming feature about it was my companion's ever refreshing personality. His was a versatile mind and an absolutely unquenchable soul.

With some little touch of humor he could always banish stern reality.

OFTEN during the physical and mental rigors of that seemingly interminable period, I thanked my lucky stars that I had not had the misfortune to be marooned with an ordinary soul.

Even our almost continuous diet of fish was to him but a joke.

We schooled ourselves to eat them frozen; partly because we believed them to be more healthful uncooked, but more because there was so little fuel with which to cook them.

In fact, everything in the igloo-shack save only ourselves was frozen most of the time.

But we never learned to eat them as do the Eskimos, attacking a whole fish, tearing off the edible parts with the teeth and discarding the head, bones—and the rest—at the end of the meal. Instead we split them and cut off the head first and attempted only half at a time.

I recall one particular morning—or was it evening?—we were no longer sure which twelve o'clock marked midnight and which noon; and for the time being it was no matter, for the sun would not rise for more than a month yet, and only the stars relieved the blackness of night.

We were eating our usual breakfast by the dim light of the oil dip. Corn picked up his frozen fish, but hesitated before eating it. I mistrusted that he was trying to summon courage, since, needless to say, we had long before ceased to care for fish. But if such was the case, his Spartan soul rose superior to the occasion. Starting to eat, he remarked blandly: "That was quite a thunder-shower we had in the

night. I imagine the links will be a little wet this afternoon!"

"I do hope that Grace had the sense to take a taxi," he went on after a moment.

I laughed a little bitterly, I fear, and went on with my meal.

After a moment he said:

"Now, Alfred,"—laying down his fish and pointing a finger severely at me—"I don't want you to think of going swimming to-day before you have mowed the grass, every bit of it. Last Saturday you went off with that Jenkins boy and left everything. You ought to be old enough to look after things a little. Why, when I was your age——"

"Aw, pa! Don't preach!" I complained, falling in with his mood, "I guess a feller has got to have a *little* fun on his vacation. . . ."

And as we laughed at our own foolishness, in some way our surroundings seemed to lose much of their relentless ferocity and the cruel wilderness of snow rolled back a thousand miles.

Several days elapsed before we again saw anything of the strange creature who had so disturbed us. Then we saw it; or at least one like it, flying low over the igloo-shack. It did not stay, but only hesitated; and the gloom of the Arctic night was so great that it was lost to view when only a few rods away.

"MAYBE he was just after a few architectural ideas," my companion reasoned as we discussed the visit; but there was seriousness to his look that belied the light remark.

A few days later—it was now nearer the time for the spring appearance of the sun, and a twilight at twelve differentiated the hour of noon from that of midnight—we heard a droning sound above and rushed out to see a large flying machine, more fish-like than bird-like, against the light blue sky.

It circled and descended; and as it came lower we could see that it was attended by several of the smaller flyers, such as we had recently seen.

Corn dove back into the shack for the gun.

"We'd better not shoot?" I cautioned; "they may not be unfriendly."

Almost as I spoke a stream of bright yellow substance poured out of the large ship. Like a round, fluffy roll it seemed as it descended toward the earth.

"Gas!" exclaimed Corn; "and poison gas, I suppose, too."

There was little wind; and the long roll, instead of drifting away or fraying out, trailed quickly down to the snow, where it lay like a solid ridge, contrasting strongly with the white of the drifts.

The ship circled; and the heavy gas, following in its wake, rapidly laid a ring about us, perhaps a quarter of a mile in diameter. But it didn't stop there.

Dropping a little inside the ring, it spiraled toward us, coming closer at each turn.

It made a most ominous and forbidding sight; and we both trembled violently, partly from cold and partly from fear, as we looked.

SOON the ship was almost over our heads and at fairly close range.

"Shall I let 'em have it?" asked Corn, raising the rifle.

"You might try," was my reply.

It was a repeating rifle and he fired three shots in rapid succession. Nothing happened. The ship kept on circling and pouring out the yellow cloud.

"Here," said Corn, handing me the gun, "you see what *you* can do."

I took careful aim and fired.

Listening sharply I thought I heard

the tap of the bullet striking some metallic surface. Nothing else.

One by one I fired all the shells left in the gun; but all to no purpose.

And now the gas ridge was but a few rods away.

"Let's get inside," said Corn, and dove for the igloo-shack.

"I guess we're up against it this time," I said following him.

"It will be just by the mercy of Hell if we escape," said Corn as he fastened the door. "Now I know what a rat feels like in a trap."

After muffling the door as best we could with a blanket, we waited in dreadful suspense.

We had not long to wait.

The sound of some heavy object dragging on the ground came distinctly to our strained ears, and suddenly something broke through the icy roof, half burying us in débris and extinguishing our light.

"We'd better get out of here before the shack comes down on us," I shouted, pulling the door open.

As we emerged we saw the yellow gas all around us and a suspended grappling hook as large as the shack itself clutch at the walls. This time the whole thing collapsed like a house of cards. The ship was close overhead, and the nauseating smell of the gas filled our nostrils.

We gasped for breath.

Corn was carrying the rifle, now reloaded.

"Don't shoot!" I warned, as he raised the gun. "It's no use. I guess they have got the cinch on us. It might only make it worse."

Corn dropped the rifle in the snow, and we stood fighting for breath.

"Maybe it's better on the ground," Corn gasped out and lay down.

"No, no," I said. "It's heavy gas." But the warning came too late. He started up but with a choking cough lay back limply.

Almost at the same instant a heavy net dropped down from above, falling on the snow beside us.

My lungs seemed bursting. The world swam round me; but I sensed dimly that the attackers meant to pull us up in the net, out of the gas.

Grabbing my companion I endeavored to lift him into the net; but my knees were weak and he seemed as heavy as lead. I did, however, manage to drag him on the slippery snow the three or four intervening yards and roll him into the net.

I remember falling over him, and then all was dark; but I could feel myself ascending as in an elevator.

The next thing I knew I was in a small room, lying on the floor.

SITTING up I found that Corn was beside me. Fearing he might be dead, I reached out and grasped his arm. To my great satisfaction it was normally yielding; and after a vigorous shake, he slowly opened his eyes. He stared about uncomprehendingly.

"I guess I must have passed out," he said. "Where are we?"

"I don't know" I said, getting unsteadily to my feet, "I just woke up."

There was a small round window like a port hole; and I looked out of it to see only empty space straight ahead; but in the distance and far below were the white snow fields of the earth, enshrouded in dark gloom.

"We must be up in the airship," I announced. "I remember there was a net let down——"

Corn struggled painfully to his feet and came to my side.

"Yes," he agreed, "they must be taking us for a ride. Well, anyway, it's something to be alive. I don't feel sick or anything, do you?"

"No," I said, "only groggy. It must be the gas wasn't poisonous. It only shut out the air."

For a while we stood at the little window, not saying much, and watching the landscape hurrying by. Evidently we were still ascending, for it gradually grew lighter while the earth grew dimmer.

After a little while the ship swung a little to the left, and there was a spot of golden light at the rim of the earth.

"Look!" said Corn—as if I could be doing anything else—"it's the sun."

Sure enough it was. First merely a flat rim, then slowly and gloriously the whole orb rose above the level horizon.

To us, who had not seen the sun for months, it was a marvelous sight. We had almost forgotten what a beautiful sight a sunrise really was.

In spite of the gravity of our predicament we felt wonderfully heartened.

"Well, this is not too bad a ride they are giving us, so far," said the irrepressible Corn. "I wonder what they have to eat?"

"I wonder too," I said. "I hope it's not frozen fish—and I hope it's not *us*."

Presently we seemed to be descending again. At least the earth now bright and white rose slowly toward us and a range of rugged hills appeared in the distance. They were snow-clad and treeless; but in the side of the steepest and highest we saw a dark blotch; and as we came closer we suddenly realized that it was an opening in the side of the mountain itself.

"It looks like the mouth of some great fish," said Corn. "I can imagine he is going to swallow us."

"Maybe we have been captured by the demons that inhabit the center of the earth," I ventured. "That book I was telling you about argued that the earth was only a hollow shell; and the author made out a pretty good case, too."

We passed a number of ponderous aircraft coming toward us, but could see no one on board. A minute later we plunged into the gloom and almost at once there was a bumping sensation and we came to a stand still.

IT was not entirely dark outside, but the light was so dim we could see nothing but a patch of shadowy floor and a few large square columns. A few vague forms were moving about in the distance.

The door of the little room in which we were immured swung open and there entered the strangest creature I had ever seen. There was a compact body, roughly the size and shape of a large wash boiler, supported by four sturdy legs not greatly unlike tiny elephant's legs. From the center of the body, which was a little less than waist high, rose a small and almost round trunk, perhaps eight inches in diameter, carrying six arms and supporting at a height considerably above our own a round head which seemed disproportionately large, being twice the size of any human head.

Corn let out a gasp of astonishment and stood staring as I did in bewildered surprise. It was, I realized, another individual such as I had seen at the fishing hole; for there were the three eyes, and the several arms. But now the face, no longer bundled up, revealed a wide flat nose and an even wider mouth and tall slim ears that followed the contours of the round head with only a slight projection. Of chin or beard there were none; but the entire creature was clothed in a glossy coat of short, velvety brown hair.

The arms were about the size and shape of human arms, and the well formed but slender hands seemed quite

human except for the disconcerting fact that there were too many of them.

The creature spoke words which we could not understand in a deep rumbling voice which seemed to come from far down in his tubby interior. Seemingly he was not at all surprised that we could not understand him, for he resorted quite naturally to gestures and beckoned with one of his uppermost pairs of arms for us to follow him. Turning about he led us across a wide deck, down a gangplank and out on the stone floor of the cavernous room.

Here he was joined by two others of his kind. These carried instruments that looked like extra long flash lights and which we took to be weapons. Here we formed a procession headed by our conductor; Corn and I following him in single file and the other two evidently acting as guards, walking one on either side and a little behind us.

Their short legs moved with surprising rapidity, and we had to step out briskly to keep the pace.

Straight back into the heart of the mountain we went, descending at a gradual slope for perhaps ten minutes.

We could see no lamps, but there was unmistakably some sort of artificial lighting; for the floor was quite visible as were the bottoms of the thick columns which we passed at long intervals and which rising to unseen heights faded into the gloom.

At length wet with perspiration induced by our rapid walk and our thick clothing, we came to a white wall and entered an open door.

Here in a well-lit room we found ourselves confronted by perhaps a dozen individuals all very much like our guide and guards and all seated either at tables, of which there were two or three, or in groups. I say "seated" for lack of a more concise term; they had simply curled up their short legs and allowed the tubby bodies to settle a foot or more to the floor.

They bestirred themselves when we entered, and gathering round inspected us and our clothing, being careful to keep at arms length away.

"I suppose they are afraid of a sock in the mug if they get too familiar," Corn remarked. "Wonder how they like our looks?"

One fellow taller and larger than the rest and wearing a large glass over his great eye asked our conductor a number of questions and then dismissed us with an authoritative gesture.

"That bird looks and acts like a German lieutenant we captured in the War," muttered Corn. "Eyeglass and all."

STILL guarded we were led on through a narrow hall of stone walls and into another room which was empty save for a tall table and two or three solid pieces of furniture which we were unable to identify.

Unceremoniously the door was shut and we were left alone.

We threw off our hot coats and looked about. In a corner behind a low wall was running water and what we took to be strangely fashioned articles of furniture.

We were glad enough of an opportunity to drink; for our throats were dry and parched. After drinking and washing there seemed to be nothing to do but to await developments.

"Do you think these things are human beings?" I asked.

"No," said Corn, "not really human beings; but they have human intelligence and they may have much better brains than we have, or even more than ordinary people have; the people who know enough, by ——, to stay in God's country!"

At last, when we had thought ourselves entirely deserted, the door opened

again and one of the ungainly creatures brought in a tray of food. And Oh! Great day! It was *not* frozen fish! but some sort of porridge made of cereal. We ate it with keen relish, and although Corn expressed himself as disappointed at not getting tea, we did enjoy the drink provided. It tasted like weak cocoa.

"I hope the social functions for the day are over," said Corn when the meal was finished. "I am dog-tired."

There were no chairs and no beds; but we did find four or five pad-like cushions and with them and our coats we made ourselves fairly comfortable. Corn fell asleep at once, but I lay awake for a long time, thinking, or more correctly, worrying.

Who were these strange beings? Did they make their home here in the ground, or was the earth really hollow, as some people thought, and these the inhabitants of an inner world? Or were they creatures from some other planet? What would they do with us? Did they know anything of our world—the world that *was* ours, before we came to the polar regions?

None of these questions seemed answerable; and at last I fell into the deep sleep of exhaustion.

In the morning, or after we had slept about ten hours, if I could believe my watch, we got up and made our simple toilets. Needless to say we did not shave nor comb our hair, for we had neither razor or comb. In fact we had nothing of our traveling kit, except that I had my sheath knife and Corn his fountain pen.

"I wonder what these brown velvet folks call themselves?" I said. "I suppose we may as well call them the Velveteens, until we get better acquainted with them."

At this moment the door opened and several of our captors entered. Two of them were evidently guards, for they carried weapons or at least instruments such as we had seen, when coming off the airship.

Corn slid down from the corner of the table where he had been perched and bowed to them very ceremoniously.

"GOOD morning, Velveteens," he said with much cordiality. But the visitors only looked at him very much as one observes the antics of an animal in the zoo and came on.

One was the large individual with the eyeglass, whom we had seen the day before. He seemed to be in charge.

As they gathered around us, he appeared to be pointing out and discussing various details of our clothing and anatomy.

The others said little; but presently one of them interjected some remark that evidently struck a humorous note, for they all laughed. A most rollicking, care-free laugh rolled out in heavy, deep voices; a laugh that was utterly contagious. Almost involuntarily we laughed with them.

"Thank God they are human," said Corn in a low voice. One fellow carried some sort of cabinet; and to him the spectacled one soon commenced to give attention.

We gathered from his gestures that he was giving instructions about something.

Presently the rest departed, leaving the one with the cabinet and two guards with us.

Setting the cabinet on the table, the creature opened the lid and working with four or five hands, started doing something inside it.

"Gosh, but can't they laugh?" said Corn. "You know, if I could laugh like that I wouldn't do anything but laugh."

"Yes, it was wond——"

——"This is WIOD, Wonderful Isle of Dreams," broke in a voice! It was

the first human voice, save our own, that we had heard for months, and the thrill of hearing it was indescribable.

"A radio," I gasped, seizing Corn's arm. We rushed to look into the cabinet.

The operator regarded us with a genial and triumphant smile; a smile that seemed to spread endlessly about his great round head. But the two guards grabbed us roughly with hands that seemed made of iron and hustled us back to our former positions. Evidently they intended to tolerate the taking of no liberties.

The operator shifted to some station in the middle west, where a pipe organ recital was in progress, and presently stopped the machine and closed the lid.

And now he opened one of the pieces of furniture about whose use we had been speculating. It proved to be something like a roll top desk, and contained what we took to be writing materials and quite an assortment of miscellaneous articles.

"I imagine he is a teacher," I hazarded. "Maybe he is going to teach us to talk."

I was right. He came and pointed to the table. "Blion," he said, enunciating very distinctly. Twice he repeated it, and then looked expectantly at me. "Blion," I said, trying to simulate his pronunciation. "Woof," he said assentingly; and pointing again at the table he looked questioningly at Corn. Corn responded "Blion." "Woof," said our teacher.

From this beginning, the knowledge that "blion" meant table and "woof" meant yes, we progressed rapidly.

Every day the instructor came and spent several hours with us; and since we had little else to do, and because we were most anxious to know all about these strange people and what they meant to do with us, we applied ourselves wholeheartedly to learning; practising when the teacher was gone and reading from the rolls of parchment-like material that served these people as books.

Little by little as we grew able to understand, our instructor told us of the affairs of the Velveteens. (Cudors, they called themselves.)

The information gained, fragment by fragment, when pieced together made a somewhat coherent story.

The Velveteens lived on one of the larger asteroids; whether one of the six hundred and more that have been sighted and catalogued by earthly astronomists or whether on some other, is uncertain.*

At any rate, this asteroid possessed a land area of considerable extent, and was one of the few known to possess atmospheric conditions similar to those of earth. They called it Marazon.

Some twenty thousand years ago, (our years; their years were very much longer, due to their greater orbit about the sun), they had reached a state of civilization so far developed as to possess a written language and consequently an historical record.

Throughout the centuries they had made progress in mechanics and the sciences; and finally, a hundred and fifty years ago, had succeeded in interplanetary flight; or rather in interplanetoidal flight; for their travels had been confined to the nearby planetoids whose orbits corresponded quite nearly to that of Marazon.

Then, a few years back, strange noises coming from somewhere in space had

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* The large number of small planets, or asteroids as they are called, now known more than fill the gap between the orbits of Mars and Jupiter. They fill it to overflowing. Their system of orbits is so complicated, however, that if each orbit was represented by a thin ring of steel wire, one could lift them all by moving only one.—From *Pageant of the Stars*, by Luyten.

commenced to disturb their radio reception in much the same manner as earthly radio reception is troubled by what we, for want of a more explicit name, call static.

Careful investigation, involving a great many experiments, traced this disturbance to earth. And although they were unable to make any sense of the system of signals then in use by wireless amateurs here, the matter served to focus the attention of their scientists on a planet that had hitherto been deemed of little importance.

A study of the earth's orbit and gravitational phenomena soon convinced them that the planet earth was rich in useful minerals. Ere long their highly perfected instruments located our north magnetic pole, (which by the way is several hundred miles from the true north pole), and their scientists concluded that somewhere in the earth, not far from this point, must be large deposits of super-magnetic material, particularly nickel-iron, such as often occurs in meteorites.

The inhabitants of Marazon had long suffered from a wandering of the planetoid's axis of rotation, similar to but very much more pronounced than the conical motion of the earth's axis.*

This had resulted in a troublesome distortion of the seasons and was due, so they had discovered, to a lack of magnetic deposits in a certain portion of their little globe.

Here, then, on earth, they decided was an abundance of material with which to remedy this difficulty, if only it could be brought to Marazon.

ON the asteroid there were several families of great wealth whose fortunes had been held together by a process of legal incorporation for century after century, until they had become permanent business institutions operated but not entirely controlled by the various organized branches of the family; grandsons, perhaps a hundred times removed from the founders of the fortune.

We gathered that the government of the country was conducted on a much more financial basis than our earthly governments are, outwardly at least. And one such organization, known by a name which loosely translated would be "The Foundation," had proposed to organize an expedition to earth on condition that the government would issue a charter granting them ownership of the planet and an agreement to buy from them a certain amount of nickel-iron in case it could be obtained and transported economically.

The arrangement had been sanctioned by the government of Marazon, and the expedition sent out.

The scientists had readily located a pressure wrinkle in the outer layers of the earth's crust, not a great distance from the magnetic pole; and here, hoping to gain easy access to the nickel-iron core of the earth, they had started operations.

Large scale machinery was brought and a vast tunnel several miles long had been driven into the earth's interior.

It was in the outer reaches of this great tunnel that we were now living!

At first the heat of the earth's interior had hampered operations; but the discovery of a large subterranean stream of water had afforded a serviceable cooling agent, and the nickel-iron, here much closer to the earth's surface than elsewhere, had been uncovered.

* In 1900, a continuous series of observations for the study of variations of latitude was started at six stations, distributed around the earth on the parallel of 39° 8' . . . from the whole mass of evidence it is apparent that the movement of the terrestrial pole is composed mainly of two motions; one an annual revolution in a narrow ellipse about 30 feet long, (as measured at the surface of either pole) but varying in form and position; the other a revolution in a circle of about 26 feet in diameter, with a period of about 433 days.—From Russel's *Astronomy*.

Large quantities of the nickel-iron, we were told, had already been sent away to Marazon; and the venture was deemed a financial success.

In the meantime, earthly radio had been progressing from the signal stage to that of the modern speaking and musical program; and had excited much interest and not a little admiration both on the asteroid and here at the works.

Of course, the Velveteens had been unable to understand the oral programs, but they had enjoyed the music and deemed it of a very superior quality. In fact it would seem that their own musical development had not kept pace with their scientific and mechanical progress. Their instruments had remained crude and their musical education limited.

Now that the mining work was well under way, the clan were giving considerable attention to the matter of sending out an exploring party to the rest of the earth; and the directors hoped ultimately to possess themselves of some of our music and perhaps many other things of value.

It was on one such expedition that we had been discovered; and the large ship had been sent out to bring us in, with the hope of securing information of both musical and general nature, and incidentally of making us the property of the Foundation.

THIS last was a most discouraging revelation, although it was not very surprising, considering the high-handed manner in which we had been taken into custody.

"I am afraid," I said to Corn one day, "that I shall prove almost a dead loss to the Foundation; I have no musical talent, and am, in fact, practically tone deaf."

"I only wish I were that way, too," he said, "then they would probably let us both go."

As a matter of fact, Corn was an accomplished musician; and when questioned by the instructor was able to explain many of the technicalities of earthly band and orchestra music that were so much Greek to me.

One day our instructor announced that I was to go to see Otarch, the director—he of the monocled eye—at the conclusion of our study period.

It seemed rather strange that he would have me come alone without Corn; and all during the lesson I was trying to puzzle out what it portended. When it was time to go, I took leave of my companion with a good deal of misgiving.

"I'm trying not to be jealous of you," said Corn as I left; "maybe next time the honor will be mine."

By this time we had learned that Otarch was one of the senior directors of the Foundation, and that he was in full charge of the earth end of the exploitation project. So I felt sure that something of importance was about to occur.

When I arrived in his presence, he looked at me critically and, I thought, disapprovingly.

"Your instructor tells me you have no musical talent," he said severely in a voice that made me feel like a criminal brought to judgment. "Is that true?" he demanded, fixing me with all three of his eyes.

"Yes," I admitted, "it is true."

"Well! You should have told the instructor before he wasted all this time on you," he thundered angrily. "Now, what are we going to do?"

It seemed a most unreasonable question to expect me to answer, but evidently he required an answer, for he waited expectantly.

"Well," I said after a moment, "I

suppose you will have to consider that your hard luck. That's what I have always done."

The great face relaxed, and he laughed jovially.

"Fair enough," he said. "If it worked for you it ought to be good enough for us."

Evidently his severity had been something in the nature of a joke; for he now continued in a matter-of-fact and businesslike way:

"In connection with our work here, we are going to start a tourist bureau. Sightseers from Marazon are going to be given a tour of the earth in specially constructed aircraft now being shipped from home. Now, of course we have conductors; but what we need is a ballyhoo man; some one to explain the sights and answer questions. I'm going to send you out to do this."

This was totally unexpected. It came like a bolt from the blue, and my thoughts were scattered in confusion.

"You don't mean to say—you don't intend to go into parks and buildings, and—places?"

"Ah, no. We intend to stay up a mile or more and view things through our high powered observing glasses. I suppose there would be complications with the local population if we were to land."

"We shall have to leave close-up inspection until we have established some sort of authority; and we don't care to bother with that until we have realized a little more income from this enterprise."

I WAS not only surprised but greatly exasperated.

"Are your people only pirates and savages," I asked rashly, "that you have no respect for the rights of others? Had you any right to take my partner and me by force and bring us here and hold us prisoners and make slaves of us? Have you no sense of right and wrong; of justice or common decency?"

He looked at me with a whimsical expression, but he spoke gravely enough.

"Why, yes of course we have a highly developed appreciation of these things. But the highly civilized naturally have privileges denied to the lower orders. We are only exercising our reasonable rights. Our higher intelligence and more advanced civilization places the world in our keeping.

"You don't consult the wishes of your domestic animals, do you? But the gap between your domestic animals and yourselves is probably not much greater than that between ourselves and you. As for justice, in your case we give as much as we receive. While you are serving us, you are receiving the benefits of living in a highly intellectual and cultural environment; and you need have no worry about your daily wants: they will be taken care of."

"I fail to see any of this super-intelligence you speak of," I objected.

"Have you or any of your people ever been able to leave the earth and its atmosphere to visit any other world?"

I admitted we had not.

"If you had our intelligence, you could do so," declared Ottarch.

"Do you or any of your people know what gravity is, or how to regulate it?" he went on. Again I was obliged to admit we knew nothing.

"Well," he said, "that goes to prove your inferiority. We know all about it. We know how to give to any object several times its normal weight, or how to make the heaviest metal light as water."

"But," I argued, "aside from scientific attainment is law and justice. How do you expect to make any treaties or other arrangements with my people, the people

of earth, if when you visit inhabited regions you do not respect my rights as a citizen?"

Otarch smiled blandly.

"We do not mean to make any treaties," he said. "We only intend to establish our dominance. When your race is convinced of its own inferority and helplessness, it will not question our rights.

"After dividing the country into districts, we shall reorganize the governments and introduce our system of industry and finance. I shall be emperor of the great central city and govern the surrounding territory. My elder brother will be emperor of the tall city on the east coast of what you call America. My uncle will be emperor of the largest city on the eastern continent and so on. Each director of the Foundation will, if he wishes, have jurisdiction over a part of the earth.

"Some of them may reside for a time each season in their own principality; others will only send agents and governors.

"OF course, all metals and natural resources will remain the property of the Foundation, as provided in the original charter.

"But all that is in the future. You will go now to new quarters in the tourist bureau. There they will try to renew your garments so that you will look as nearly like a typical earth-man as possible, for the benefit of the trippers. They will be coming in, in a few days."

"But my friend," I objected; "will he not go with me?"

"No. We have other plans for him," was the cool reply. "He is already on his way to Marazon. His musical ability will, we hope, render him a valuable asset."

"Our county needs more and better music."

With a wave of the hand he dismissed me, and turned to receive some one who had been waiting.

The guards hustled me away.

Any attempt to describe my thoughts and emotions would be futile.

There were moments of grief, of furious anger; of incredulity and utter discouragement, as I realized that Corn was gone; that I was to be little better than a slave, and that the whole earth was in danger of ruthless subjugation.

Arrived at my new quarters I was left alone in a small room bare except for a high table, to think of my predicament.

How would Corn fare, alone among these strange despots? Did they really think they were superior to us? Could it be they really were? Would they be able to overcome the nations of the earth, and become its rulers?

Did they have any superior weapons besides the gas? What would they do after securing absolute control?

All these questions beat insistently upon my brain; but I could find a conclusive answer to none of them.

IT was long hours later that I finally fell asleep, considering the statements of the would-be emperor of Chicago; that things could be made to have two or three times their normal weight and then I dreamed the old dream that had not troubled me since boyhood; a dream that I think affects all children. Something dreadful was chasing me across a wide field. At first I ran at a good pace; then my feet and legs grew heavier and heavier, and I could hardly run at all. Presently I could only walk; but the dreadful Thing was so close behind me that I dared not stop. In order to make any progress I had to lean over and claw myself along with my hands.

Then I was down on my knees; and finally lying down; pulling my heavy, cumbersome shape along by grasping the grass and clawing into the ground with fingers and toes.

I awoke trembling and sweating and slept no more that night. In the morning Modu made his appearance. Modu was assistant manager of tours; and he radiated efficiency from every pore.

I was to go with him, he said, observe all that he did and said, and so learn as much as possible about the tourist business. But first we must attend to my beard and long hair.

He took me to a hairdresser who following my directions trimmed my hair and my bushy beard, converting it from what had threatened to be a Van Dowie into a neat Van Dyke. Never having had any use for razors, these folks of course had none; and having worn no clothing, save for decorations at feasts and celebrations, had but little cloth and of course no skill in tailoring for such queerly shaped persons as earth dwellers.

"We need not worry about your clothing," said Modu. "We have word that an airplane with four passengers is being brought in. Some of these passengers will no doubt be dressed in clothing suitable for your work, and we will make an exchange."

So there were to be other prisoners, I thought. Other victims of the ruthless tactics of the Emperor of Chicago. This wearing of some stranger's clothes seemed little short of barbarous; but I knew it would be useless to object.

Since Modu had taken me in charge, there had been no guard in evidence; but I noticed that Modu was careful not to let me get out of his sight, and I suspected that the guard was still somewhere in the background.

A hotel for the expected tourists was being fitted up with bar rooms, dining rooms and sleeping apartments; and Modu was busy going about seeing that everything was properly arranged.

The sleeping rooms were provided with telephones, radio sets and television instruments and various other mechanical devices, but no beds and no chairs. There were, however, a great many cushions and pads of various sizes and shapes, and each room had a tall table.

And now I learned for the first time how a Cudor took his ease, and how he retired for the night.

A Cudor's bed was nothing more elaborate than a long strip of fine, soft netting, perhaps a yard wide. This was hung in a loop from a hook in the ceiling or some other convenient fastening and in its low hanging loop Mr. Cudor simply leaned the upper part of his slim trunk and his heavy head and so rested or slept with his feet and the broad base of his tubby body resting flat on the floor, perhaps on a pad or cushion.

AN ordinary business suit, even to hat and shoes, was brought for my use as Modu had foretold. But when I asked as to the fate of the erstwhile owner, I could obtain little information.

Modu said that the airplane had been taken in order to study its mechanism; and that its former occupants would be held to await the pleasure of the resident director, Otarch.

When I found the shoes quite too small for me, they were taken away and replaced by a pair that proved a size or two too large, but that were much to be preferred to my heavy frontier boots.

Interplanetary ships, huge cigar-shaped craft with no visible means of propulsion, commenced to appear, bringing dozens of trippers; and soon it was evident that the tourist season was on. It was with a strange mixture of pleasant

anticipation and discouraged dejection that I set out with the first group of tourists one morning to fly south. I was to see again my native land after so many vicissitudes; but not intimately and as a free citizen; only from a height and as a slave amid unearthly creatures.

Our conveyance was of much the same shape as the one in which Corn and I had been brought to the subterranean world, and furnished ample room for saloon and sleeping accommodations for the two dozen passengers and a crew of three besides the tour director.

Our craft was painted in gay colors and bedecked with bunting and pennants as for a gala occasion. Everyone was in holiday spirits.

Outside the great cavern it was spring. Much of the snow was gone, and here and there a mirror-like surface proclaimed open water. And as we traveled south, we met long V-shaped strings of wild geese and hurrying flocks of ducks coming back to their summer quarters. When after an interval of swift travel the bleak and rocky landscape gave way to green meadows and stretches of forest, and a faint odor of growing things mounted up to us on the sweet south wind, I experienced a thrill of delight that even my sense of servitude and the insistent questions of the trippers were powerless to dispel.

At a height of about five thousand feet and a speed of about four hundred miles an hour, we passed several rivers and other landmarks, that I was unable to recognize, and presently came in sight of a wide river which I instantly knew for the St. Lawrence, with its shores divided into long narrow fields abutting on the water and leading far back at right angles to the shore.

As I was explaining, with diligent search of my limited vocabulary, the nature and colonial origin of the narrow farms, some black with fresh plowing, some green with growing grain and some white with blossoming orchards, we came in sight of Quebec in the distance.

Clear and bright it stood in the morning light; the upper town perching airily on its high mountain and the sailing ships and ocean liners crowding the glittering river. It was a beautiful sight, and the Cudors greeted it with enthusiasm. And in my attempts to tell of the ocean-growing traffic, the Plains of Abraham and various other things, I lost my feeling of enslavement and inferiority and became at least for the moment a showman.

I had always had a great affection for Quebec and the lovely St. Lawrence River, greeting them as old friends on my return from England on sundry occasions. How little I had thought then, as we passed under the great bridge and approached the harbor, that one day I would be a rubberneck man on an airship, piloting a weird collection of denizens of another world!

AT one time or another I had flown over much of the United States and some of South America; but I was rather dubious about my ability to recognize some of the cities and many of the landmarks from such a height as we were traveling and at such tremendous speed.

We found New York City wrapped in a deep fog; and as we flew over, only the tallest of its great buildings towered up out of the whiteness, like so many giants issuing from the depths of the sea. Then we turned west, crossing the beautiful rolling country of the Finger Lakes district, skirted Lake Erie and soon sighted lower Lake Michigan and the smokes of Chicago.

As I was telling of the sudden growth

and economic importance of the city, we turned south; and a sudden and unmistakable odor made it necessary for me to launch into a description that I had meant to pass by very lightly; that of the business of the stockyards.

Still bearing south, we passed over the great development at Mussel Shoals, turned west to the Mississippi, followed the great stream down to New Orleans and the delta, and struck out across the Gulf for the Canal Zone.

All the great developments and engineering accomplishments, including the Panama Canal, the Cudors regarded in much the same manner as we look at a beaver dam or the efforts of primitive savages in building a big-game trap.

Time and space forbids my describing our trip over South America and then east over Africa and the great continents of Europe and Asia, and our return to our base after several days of continuous flying.

During our voyage we had sighted a great many aircraft of various kinds; but our tour director assured us that there was no chance of their molesting us, because of our superior speed and the fact that we were armed with the gravity projector.

This mention of the gravity projector was the first intimation I had had of the nature of the weapon with which the Cudors intended to establish their mastery over the earth. This weapon I of course did not understand, and no explanation was vouchsafed at this time.

Arriving at headquarters, we found that more tourists had come; and Modu immediately assigned me to a tour that was to cover the west coast of America, including the Land of Ten Thousand Smokes and the Aleutian Islands.

My next trip took me away to the fjords of Norway and the steppes of Siberia, and over the Chinese Wall. When I returned, I learned that another sightseeing craft belonging to the Foundation had been attacked by anti-aircraft guns and airplanes while flying over a city in Europe—what city I was unable to learn—and had been nearly wrecked. It had been a well-planned surprise attack; and only the great speed and prompt use of the gravity projector had averted disaster.

WHAT was more serious, the four prisoners who had been immured in the cavern had escaped from their quarters, appropriated a sightseeing flyer and attempted to fly out of the great tunnel. But they had crashed into an idle excavating machine; the flyer had been utterly demolished, and all four had been killed.

All this I heard from Modu on arriving at the station; he also said that he had orders to place me under strict guard and to send me to the director.

Otarch I found in a towering rage.

"You people are acting like fools," he greeted me. "You haven't even as much intelligence as I had expected. It's really a shame for creatures of such ignorance to have possession of a whole planet; it seems impossible that people with a written language—and even with flying machines—could be so backward.

—"How great is your population?"

"COUNTING the less progressive races, there are more than a thousand million."

"Do you mean to say there are some even lower intellectually than the others we have had here?"

"We are of the highest type of mankind," I answered; "there are many races who are savage; with no government, no machinery—not even any clothes."

"Clothes?" he echoed. "Are *they* a mark of superiority? Do you wear

them when it is not necessary as protection against the cold?"

"Why, yes," I explained, "we wear them indoors and out. We have an idea that they make for elegance and dignity, and there is a deep-seated superstition that they make for modesty as between the sexes."

He regarded me with a look of incredulity.

"Superstition is a common enemy," he observed. "Superstition has always retarded progress; we are still the slaves of a number of minor ones.

"You can go back to your work now," he continued severely; "but I warn you that if you attempt any tricks or any disobedience, you will be executed instantly. The behavior of the prisoners, and that of the people, who attacked our sightseers, have strained our patience to the limit; and there will be no leniency. Only the fact that you have proven tractable and that your companion is doing good work on Marazon has so far deterred me from advising the board of directors to exterminate your whole race—or at least confine them to a few remote reservations."

He turned away and the two guards hustled me back to the tourist station. I was angry and humiliated; but I swallowed my indignation. What else could I do? At least Otarch had inadvertently given me a crumb of comfort. Corn was still living.

During the next few weeks I made several world-tours, all under the watchful eye of a guard. Then came the first movement of aggression against the people of the earth. And how was it announced? Modu calmly told me that a new feature was to be added to the tourists' entertainment!

Those who so desired and were furnished with special tickets, were to be taken to see the building of the great ornamental fence and land-marker that was to divide the Chicago territory from the adjoining districts. Only a charitable consideration for the printer's feelings prevents me from showing how "Chicago" was written in Cordu.

This area, to be known as the Empire of Chicago, was to be many hundred square miles in extent. In fact the fence was to start at the upper end of Lake Superior, extend south almost to St. Louis; then east to the Ohio River, make a wide curve and come back to the shore of Lake Erie, allowing the four great lakes thus spanned to form the northern boundary.

I realized of course that there would be opposition to this undertaking; that it would in fact precipitate a war of the races, and a show-down as to Cudor supremacy; and so I awaited the outcome with anxiety and misgiving.

THE most exasperating and discouraging part of it all was the realization that I must remain a mere onlooker; powerless to help or hinder either side. I wondered if ever before in all history a man had been placed in such an unenviable position; that of having to exhibit for others' entertainment the subjugation of his own people.

Evidently the Cudors were not anticipating any serious difficulty, since they were not even suspending the tourist activities during the period that they must have known would witness every effort of the earth people to repel the invaders.

Of course, mankind could have no knowledge of the intentions of the aggressors, or of the extent of their strength. In all probability, I reasoned, they could have no knowledge of the great development of the Cudors' in the far north; but they must know something of their presence on earth from having seen so many of their swift aircraft around the globe. That they

considered these flyers a menace was made plain by the attack in Europe.

At any rate, it would seem that by this time they should be thoroughly aroused to the fact that some sort of extra-terrestrial creatures were abroad. I tried to imagine what the newspapers and the radio would be saying about the strange, swift craft, obviously so much superior to any earthly machines. Radio had been denied to me ever since I had been transferred to the tourist bureau.

I tried in vain to study out some scheme whereby I might give some warning of the magnitude and details of the plot which was being perfected; I cursed myself for a fool that I had not at least dropped overboard from the airship a letter telling of the Cudors' plot, during one of my earlier voyages. Now of course it was too late; I was under guard all the time; watched both night and day. My first trip to the scene of the fence building—the start was being made at the Lake Erie end—convinced me that there was to be no delay in offering opposition to the Cudors.

With a full quota of sightseers we arrived over the lake shore; and soon we made out that the operations were being carried on between two long lines of yellow smoke-screen extending away out into the lake and for a dozen miles inland.

Flying low, we made out that a wide foundation of metal, evidently nickel-iron, was being laid down and on this was being erected the boundary fence proper. It consisted of a series of great, square columns, perhaps fifty feet wide and two hundred feet high; surmounted by a continuous high-pitched roof. The spaces between the columns were spanned by a screen work of very close and intricate design.

Several lengths of this screen were already in position; and the observation glass revealed a scroll, written in gigantic letters, reaching from top to bottom of all the panels.

Presently one of the tourists read aloud: "Erected by the First Emperor of Chicago in the first year of his, beneficent reign, in commemoration of——" But the rest of the legend was still in the making, and he was obliged to refer to the tour-leaflet to find out its eventual completion.

THE structure was so tall and gigantic it seemed utterly impossible that the builders could be contemplating its extension for over a thousand miles, to take in the whole Chicago territory. But the magnitude of the machines at work on the ground, and the great freighter airships that were bringing materials indicated the invaders' ability to carry on in Herculean style.

I referred to the printed information in the tourist hand-book, and read:

"This artistic land-marker is being erected entirely of metal from the earth's core; and is being molded into place on the grounds entirely by mechanical means. The actual operations are being directed by television and remote control from the Foundation's Field Office in the North. Gas is being used to prevent the natives from interfering with or destroying the work. When the machinery now under construction is placed in operation, it will be capable of building twenty-five miles a day. The natives of this area will all be marked with an inscribed ring, either about the wrist or neck, and will be required to stay always within the limits of the fence."

It seemed strange there were no airplanes flying about, to at least observe what these marauders were building; but the reason was soon apparent.

High above us, hanging almost mo-

tionless in the sky, was a large Cudor flying machine; and from it issued a group of their red rays of bright light, that gradually spread apart to form a cone in the air; and when directed to the ground, marked out a circular pattern composed of several dozen brilliant red spots.

"It's the gravity intensifier," one of the passengers explained for the benefit of his fellows; "it's one of the largest ever built; has an effective range of over fifty miles. I heard a description of it over the radio last week. It is capable of tripling the weight of any substance more dense than water. The power is broadcast from Marazon."

"But I thought magnetism was invisible," objected one; "and these beams are a bright red."

"No. The beams of light are not the active agent. Their only use is to indicate accurately the direction in which the force is being sent, and the field that is being covered. Merely a convenience to the oper—— Wait!" he interrupted himself; "here comes an enemy flyer. Let's see what happens."

Indeed a large multiple-motored biplane was approaching from the east; and as our own pilot put on speed to carry us out of danger, we saw the cone of light beams flicker about uncertainly for a moment and then envelop the plane.

At the same time we heard a terrific roar from the ship above; and almost at once the airplane, which had been flying on a level, started to settle toward the ground, waveringly and unsteadily.

"You see, its wings are too small to support its increased weight," said one of our passengers. "It will probably crash." But it didn't. When it was very low, the cone suddenly leaped away and the hard-pressed plane, like a bird that has shaken off the pursuit of the hawk, straightened out in smooth flight and sailed away, back in the direction whence it had come.

But another one that came from the opposite direction a few minutes later did not fare so well. When it was enveloped by the long cone, we saw the ends of its wings bend and turn upward; and then suddenly one of them crumpled and the plane went hurtling earthward, leaving a dense black stream of smoke behind it. A moment later we could make out only a black and tangled mass of wreckage.

UPON searching the landscape carefully, we discovered that there were a number of such wrecks. It seemed probable that there had been a massed attack by aircraft, and that they had been routed.

I was quite overcome by the blood-curdling display; but the trippers viewed it with shouts of delight and enthusiasm.

I felt an almost uncontrollable impulse to rush at them in a furious attack; but the guard was, as usual, watchful of my slightest move, and I was obliged to calm my feelings as best I could.

At this juncture the tour conductor came on deck to say that it was being reported by wireless that a large army, mostly tanks and artillery, was coming up from the south.

* * * * *

TURNING our attention in that direction, we see that there is indeed a large force on the way. It extends for miles. Our powerful observation glass is turned toward it, and the shadowy moving mass springs into detail.

Crossing a meadow are rows on rows of horse-drawn cannon. The sleek, well-groomed horses are moving gingerly, and the artillerymen are cocked jauntily on the gun carriages. And here a little

way to the left are heavier guns; massive howitzers and mortars, hauled by tractors that cut deep into the soil and leave the turf behind them looking as if it had been plowed. Still further to the left is a paved highway, along which are moving long-barrelled, wicked-looking cannon mounted on their own motor-driven trucks and dwarfing the horse-drawn guns until they seem mere toys. Beyond these on a steep hill-side, swarms of caterpillar tanks, all moving along at the same speed like a horde of tussock moths going up a tree trunk.

Still further on, the crest of the hill is covered by marching men; whether volunteer or regular troops I am unable to decide.

Away to the right are swarms of quick-moving men, horses and machines. There seems to be no order in their movements. They rush about like so many excited ants when their ant hill has been broken into. But among them a slightly raised, smooth graded fill is appearing; and behind them, as if growing by magic, several lines of railway spring into being to accommodate a long line of giant guns that come sliding along, each mounted on and extending over several flat cars, and appearing indescribably grim and powerful.

They are evidently improvising a spur to the permanent railway line that crosses a long trestle bridge a mile to the west, where a long train loaded with guns and ammunition creeps along as though uncertain of its footing.

And now we can see the wide ring of red spots moving quickly over the landscape, like some sprightly moth airily searching for nectar-filled flowers.

AT the long bridge it comes to rest for a moment; and we heard the distant but ominous roar as the projecting ship, high in air, receives and transmits its power.

The long bridge sags in the middle and crumples as a thing of wax; and the train, writhing and breaking into sections, tumbles to the bottom of the valley.

Now the ring of bright spots shifts to inclose the railway construction; almost instantly all activity ceases.

We see the horses first fall to their knees, and then topple over. Men stand still with their feet set firmly on the ground, trying to support their sudden great weight. Some succeed for a few moments. Others are on their knees or on all fours, and still others are lying flat.

Most of the tractors sink deep into the ground and come to a standstill.

The great cannons on the railway spur crush the cars under them, and some roll off the sides of the sagging trucks.

But one section of the horse-drawn artillery has halted and is unlimbering for action. Several guns roar out, and we see white puffs of shrapnel blossom in the air, far up toward the projecting ship. Presently the cone of bright rays shifts to encompass this sector. A few more shrapnel explosions occur; but they are so low as to seem very futile; and our glass shows the artillery horses kneeling or falling down and the artillery men moving slowly if at all.

One fellow, I notice, is passing a shell to a gunner when it suddenly becomes heavy. He staggers, hangs on determinedly, and tries to get his arm under it. It gets away from him and falls to the ground. He makes a desperate but unsuccessful effort to pick it up again and falls on top of it.

All the actions of the men recall most vividly my ancient nightmare, recently repeated.

Here and there gun carriages break down and all activity ceases.

But the circle of red spots is enlarg-

ing, and is soon shifting to take in a large section of the marching infantry. The columns halt, waver and break in confusion; soldiers staggering in all directions drop their guns and fall. Some turn back and slowly creep toward the rear. The ray shifts back to the artillery, where some of the men are getting up from the ground and moving about. Their activity is short-lived. A few minutes suffice to halt the whole advancing army. Even the motors on the highway find their loads too heavy to pull and come to a standstill.

Now the air ship moves a little to the right, and perhaps half a mile out toward the lake and turns loose a large white bubble. The bubble comes floating down.

OBVIOUSLY it is filled with heavy gas, and I hear the tour conductor explaining that it is probably a modification of the gas used in Marazon to exterminate beetles and other pests of the fields.

It soon becomes apparent that it is being carried so far to the left that it will miss the army altogether.

The ship shifts still more to the right and lets go another; a larger one this time; and, while this is coming down, they continue to shift their position slowly and liberate a whole series of the great bubbles.

I have no doubt they are designed to break up on making contact with the ground; but to my surprise the leading bubble explodes, forming a wide flat cloud of bluish white a thousand feet in the air. The cloud settles waveringly but rapidly.

Perhaps some gunner has made a lucky shot and hit it. There is still some shooting going on in remote sectors. But when the next one and the next explode at about the same level, it becomes obvious that they have been designed to do so; but whether actuated by atmospheric pressure gauge or a time device I can only surmise.

All these clouds settling on various sections of the army hide them from view. Meanwhile the arch of red spots moves slowly and methodically about, covering each sector every few minutes.

It was a fearsome sight; and the thought of all the helpless soldiers, dying there like so many pestilential insects, is too much for my nerves. I turned away, determined to look no more.

Soon the tourists became restless; the affair was no longer spectacular. The conductor gave the word to go ahead, and we were off.

Presently I am answering questions as usual; yes, that was a lake, and not a very deep one. The dark green patches are corn fields. The white people had learned to raise corn from the aboriginal race whom they had driven out and superseded. Yes, there were a few Indians left. They were not very greatly different from ourselves, except that their skins were red.

Yes, there must have been a windstorm, a tornado, very recently. These tornadoes often tore up trees and demolished buildings in this part of the country.

No, that was not liquid, and the waves were not real. It was only the undulation of the heads of a great field of ripe wheat, stirred by the wind.

No, I couldn't say why all the big barns on the farms were red, and all the little houses white, except that this was a time-honored custom. No, nothing religious or superstitious about it; just style and habit.

Grain stacks were always built round and conical, in order to protect the heads of the bundles of grain from the weather.

No! It was not really essential to have a steeple on a church.

COMING back two days later to headquarters, I learned that the earthly army had been completely routed, and the few survivors scattered in all directions.

This was as I expected; but the news was crushing, none the less. It seemed to me now that the human race was doomed to a life of inferiority and subjection.

I could imagine no possible way in which a people, no matter how determined, could successfully fight these Cudors, whose airships by decreasing their own weight could withdraw far beyond the ceiling of earthly aircraft and the highest range of anti-aircraft guns. In case lighter craft and longer range guns were invented, I knew the Cudors could withdraw even beyond the limits of the atmosphere by using their interplanetary flyers.

Other governments, notably the British, realizing that this invasion marked a world crisis, sent expeditions to cooperate with the American forces and attacked the invaders, or rather tried to attack the machines of the invaders, working on the great fence. But they all succumbed to the same tactics that had routed the first great army. And the transportation of troops for this campaign called the attention of the Cudors' scouts to the presence of the great war fleets. And not only the American and the English, but all the other fighting craft that could be found afloat were promptly sunk. No warnings were given, and no attempts were made to rescue the crews.

These sinkings always occurred in clear weather. A large airship would appear high in the sky and the circle of red spots on the water would indicate that the boat had been located. In a few minutes the battleship would commence to settle deeper and deeper in the water, and in half an hour she would be completely submerged and would sink. Sometimes the lifeboats, if only partly loaded, would be able to survive; but many men, endeavoring to swim, at once sank and were drowned.

Meanwhile in the Chicago district the building of the great fence went on apace, and similar structures were started to bound various other tracts in America and abroad. I learned that there was to be the New York City district, taking in several adjoining states; the New England district, including Boston; the New Orleans district, and so on. England was to have a fence cutting off London and the home counties from Scotland and the Midlands; and Europe and Asia were to be criss-crossed in several directions by the Emperors' Fences.

The fences after being completed were left unprotected; but in case the earthly inhabitants tore them down or damaged them, as happened in several localities, the whole neighborhood was quickly drenched with lethal gas which destroyed even the vegetation everywhere it permeated. The damage to the fences was later repaired.

These fences had no gates. Highways and railroads were torn up and closed.

* * * * *

ONE day, upon returning from a South American tour, Modu told me that the manager required me for other work, and I was to report to him at once.

When I presented myself, the manager said: "I am going to send you down to Chicago to take care of some work for me. I am undertaking a disciplinary measure that requires personal attention.

"I mean to put a nickel-iron ring around all of my subject's right wrists, bearing a number and the inscription, *'Subject of the Emperor of Chicago'*.

"I have had a machine prepared which will mold such a ring on the arm of each subject without seriously burning the flesh. Such a machine, capable of casting a hundred thousand rings a day, will be set down outside the city; and I am going to send you to call on the inhabitants to come in orderly fashion to be tagged, and to see to it that the work is carried out promptly.

"The Emperor of New York will do the same, and all other districts will follow suit."

I was so staggered by this bare-faced proposal that I could only gasp with anger.

"I can't do it," I declared, when I had found my voice. "It's impossible. The people would kill me if I attempted to be your agent in any such undertaking."

"That will be your misfortune," was the manager's calm rejoinder. "If they kill you, I shall have to try some other method." Then he regarded me a moment thoughtfully and meditatively.

"Of course," he continued, "we can safeguard you to some extent by threatening retaliations in case you are attacked. I can promise to depopulate half the city, half the country districts, if you are killed. There are so many earth-inhabitants that we have no need for conservation. Destroying a few millions might impress the rest, and render them more tractable.

"Your guard will now take you to have your own wrist ring made, and my secretary will prepare for you a set of printed instructions and provide you with a radio broadcasting instrument."

The applying of the identification ring proved to be a fearsome and painful operation.

I was required to thrust my right arm at full length through a small hole in the side of a ponderous and forbidding machine. For a few minutes nothing happened. Then my hand and arm were slowly gripped by a hard, cold mechanism that nearly crushed them. A thin wisp of smoke issued from the machine, and something hot, excruciatingly hot, bit into my wrist. Almost involuntarily my muscles contracted, and I found myself pulling and straining with all my might to pull my arm away; a hopeless attempt.

I pulled my hand out, to find both hand and arm bright red from the heat. On the wrist was a bright, heavy band an inch wide and weighing no less than a pound.

It fitted my wrist rather loosely. One of the guards examined it.

"IT is a little too loose," he said, "but perhaps it will do. You see, the size of the ring is gauged by the weight of your body, as you stand on the platform; and in case your build is not entirely symmetrical, the ring is naturally a bit too tight or too loose."

Later, alone in my quarters, with two guards stationed outside the door, I bathed my arm in cool water and read the inscription standing out in bold letters on the ring: *"Subject of the Emperor of Chicago." No. 1".*

The skin of my wrist seemed uninjured, and the burn was only superficial; but the anger and humiliation I felt burned deeper and deeper.

The next morning my secretary came and took me, still under guard, to the broadcasting station which had been set up for my use. It was housed in quite a large building, which, as the secretary explained, was erected in sections and would be set down with me in Chicago, to become my headquarters, when the necessary arrangements were completed. The broadcasting station was entirely automatic in its operation, I was

told, and required no more attention than a receiving set.

The microphone was housed in a small glass cabinet, and opening the door to this effected the necessary contacts to put the station in operation.

It was tuned to a wide band of wave lengths, the secretary explained, and had power enough to blanket out all American stations.

My orders were: "You will broadcast this message at once, and await further instructions." Saying this, the secretary handed me a printed sheet and took his departure.

I translated the message.

"This is the executive office of the Emperor of Chicago, calling for his subjects within the city and county bounded and set apart by his Majesty's metal fence.

"In order that all individuals of a stated age may be registered and provided with proper identification, a station will be prepared near the city—the exact location to be made known later—and all subjects will be directed to report to this station in groups of one hundred thousand each day, beginning one week from to-day.

"Local officers are called upon to divide the territory into districts of approximately one hundred thousand inhabitants, that each section may be assigned a registration date.

"Any attempt to evade this registration will meet with stern displeasure of his Majesty, and will result in the immediate execution of those refusing to comply with this edict."

It was with a strange feeling of unreality that I took the microphone out of its cabinet and started to recite this repulsive message. It did not seem possible that my voice was reaching the people in and about Chicago, from this far northern and far underground remoteness.

My voice sounded husky and weird, and I tried in vain to picture the people listening to this message with their receiving sets.

ACCORDING to instructions I was required to repeat the message in an hour. The second time the performance seemed to me more real and plausible, and it seemed more as though I were speaking to real people. Needless to say, I had little heart for the thing I was forced to do; and had it not been that I believed that any disobedience on my part would lead to my elimination, and to even more drastic methods of subjugation for my people, not only in the Chicago district but in all the world, I would rather have been struck dumb than to be the Cudors' mouthpiece.

Already there had been I knew not how many millions of deaths.

I felt that I was only an instrument in the hands of Fate, and I hoped dimly that in some way I might be of some service in mitigating the bitter lot of my unfortunate race.

Two days later I was taken out in a small flyer and carried over the "Windy City," in order to choose a locality for the registrating station.

The most advantageous place seemed to be the great water-front Park; and here, together with the radio station and the numbering machine, I was set down two days before the registration was scheduled to start.

The freight carriers detailed to handle the outfit did not make a landing, but only hovered over the Park and let the paraphernalia down with long cables. Evidently they felt a landing would be unsafe.

There was, however, no sign of disturbance or attack, and I immediately broadcast my position and asked for a conference with the mayor. At the same time I gave a brief explanation of my

identity, and why I was in the service of the Emperor.

I expressed the earnest hope that no one would be so rash and foolhardy as to resist the will of the race who, because of their superior mechanical ability, were undeniably in a position of dominance.

I ended by reading the brief proclamation issued by the emperor, regarding reprisals in case I was molested or my work interfered with.

The mayor came in obedience to my call, and reported that arrangements for the registration were well under way, and the hundred thousand quota would be ready for the first day. He also agreed to provide two hundred police to handle the great crowds and regulate their coming to the machines.

His feeling against the Cudors was very bitter, but he agreed with me that, so long as there was no reasonable chance for successful resistance, we might as well accept the inevitable, with as good a grace as possible.

THE early morning scene of the first registration was one never to be forgotten.

High overhead was our control ship, ready to broadcast the power that was to operate our fifty marking machines, or rather one great machine composed of fifty units, having holes for fifty arms.

The great park was packed full of humanity as far as I could see, while close at hand were rows on rows of individuals, lined up in single file ready for the beginning of the operation which was to mark them as the slaves of the Emperor.

The people in the lines were of all ages, conditions and descriptions. There were old, bent men and women; men in the prime of life and as many children.

THE grown people seemed resentful and sullen, and most of them were nervous and frightened. But the children for the most part were in a holiday mood—full of laughter and good spirits. Naturally they were unable to realize what it was all about. This made it all the more sickening to watch.

My eye fell upon one of the signs which I had printed in English and posted according to directions in a number of conspicuous places. It read:

"Persons having been fitted with identification rings are hereby forbidden to remove them under any circumstances. Any one over the specified age who is found without a ring, after the close of this registration, will be executed; and any person bearing such identification found outside his Majesty's boundaries or attempting to pass through will be similarly dealt with.

"These rings are the property of the Emperor exclusively, and must not be defaced or tampered with."

All thoughts, that any relations with these cruel and despotic creatures can lead to anything but servitude and degradation, faded from my mind.

"I looked at the "No. 1" on my own heavy ring and realized that I was only a slave among slaves.

AND now the muffled roar of the machinery starts up, signalling that the day's work is beginning. The long rows of victims step forward and in a moment fifty cringing forms with arms thrust into the machine holes and as many small wreaths of smoke give evidence that the painful process of numbering is going on according to schedule.

Within the machine is heard a series of loud clicks, and the people at the holes withdraw their arms; they look at the rings in pain and sorrow, and pass on to give room to those behind.

I turn away and go into my radio sta-

tion to report to the executive office that His Majesty's registration is going forward. . . .

* * * * *

OF the particular time that this work went on day after day, each with its hundred thousand markings, there is not much to tell. Each day was like the last; and each day the multitudes that came seemed little different from the ones of the day before. I came to think of people not so much as individuals as in units of a hundred thousand; of great droves which came in the morning and were gone at night.

The machines worked perfectly and tirelessly, and each evening a supply of material was let down by cable for the next day's operations.

Every day I conferred with local officials, issued orders to local police, reported to the Executive Office—in fact, my work was such routine and so uneventful that it seemed as though I myself was but a part of the mechanical equipment, moving in response to mechanical laws.

At last the stream of humanity dwindled, and orders came for me to prepare to move to the New York district and enter the services of the Emperor of New York.

MEANWHILE the Emperor of Chicago had caused a metal castle to be erected on the shores of Lake Michigan, a few miles from the city; and announced that he would soon take up his residence there and personally attend to the ruling of his subjects. He ordered ten men, who had had experience in teaching languages, to be sent to the castle to receive instruction in the Cordan language, in preparation for becoming translators and interpreters.

It took some four months to register the inhabitants of the New York district; and from it I went to New Orleans and finally to London. And it was here that I received the first news of Corn on the planetoid Marazon.

For some time musical programs had been coming through from the planetoid; and just before daylight in the morning they were especially clear. I had formed the habit of setting my alarm clock and waking up to hear them, in the hope of learning something of my old comrade.

The programs had been largely instrumental, with occasionally a vocal number. On this particular occasion a tremendously heavy, typically Cordan voice had rendered a solo; then I was thrilled to hear a fine tenor voice—a voice that was unmistakably human, and very much resembling the voice in which I remembered having heard Corn sing "hillbilly" songs, while we were in the wilderness.

At first the words were indistinct, but with a slight shift of the dials I was able to bring them in clear and strong! The words were, of course, Cordan as was the announcement that followed:

"You have been entertained by Cornwallis, recently made Assistant Musical Director of the Department of Education."

So! Old Corn was alive and carrying on! This was most gratifying news. I wished I could talk with him, and wondered if I should ever see him again, either on Marazon or on this much changed and disorganized world of ours.

Not long after this I was surprised to receive a summons to return to America and to the New York district. The Emperor of New York was to hold a great coronation ceremony, at which all his subjects would be required to be present, and, in honor of which, the planetoid, Marazon, would actually visit the earth.

It was to be my duty to arrange for

the building of a landing place, and to see to it that all of the more than ten million inhabitants of the New York district were gathered together at the proper time.

I gathered—not from my instructions but from snatches of broadcasts from Marazon—that, due to the completion of some sort of apparatus in the development of which the Foundation had been particularly active, the Cordans were now able to navigate their planetoid and make excursions outside their regular orbit, and the globe, now perfectly balanced, thanks to the supply of magnetized metal brought from the core of the earth by the Foundation, was able to actually land and take off from other planets.

So, in recognition of the services of the Foundation, the government had decided to set aside the birthday of the organization's senior director and make it a holiday and the occasion for visiting his earthly domain.

THE Director, in order to entertain his guests and impress his subjects, had arranged the coronation program. The symbol of his authority was to be a crown, according to earthly custom; but not a crown of gold and precious stones; his crown was to be of nickel-iron, taken direct from the earth's core; somewhat reminiscent of the iron crown of the Lombards.

On a large tract of especially level farmland in the central part of the Empire State, I set to work to prepare for the eventful day. Full instruction charts and blue prints had been provided by the Foundation.

First we had all farm buildings, groves and other obstructions removed from several thousand acres, and the ground all cultivated and seeded to grass. Only a railway and an automobile highway were left intact. Then a platform of stone, concrete and steel, more than an acre in extent was laid down and so built that it was all locked together in one solid mass, with a row of great steel rings anchored along one side.

THE land lying on three sides of this low platform was surveyed and staked off into sections with avenues between, after the manner of a theatre. These sections were subdivided into a million stations, designed to afford standing room for one person and tagged with a serial number. Those under a million were in one section; numbers from three to four million, in another, and so on. Markers were erected to indicate to the crowds where to seek for their numbers, and each person was required to proceed to the number corresponding to the one on his identification ring and take his station.

The fields at the back of the platform were left vacant to accommodate the vast bulk of the visiting asteroid.

There was much to be arranged to provide transportation and temporary camping quarters for all the people, and to make policing arrangements to avoid delay and confusion, while the multitude were taking their positions.

* * * * *

AT last the eventful day dawns, and I feel confident that matters have been well looked after, when, a little after daylight, I go out to the grounds to await the arrival of Marazon.

I have had word from my superiors that the asteroid is now hovering over New York City, and that after an hour's sight-seeing it will proceed to the landing field.

Mounted and foot police are already on the ground, directing the fast arriving hordes of people, and soon the stations begin to fill up.

By the thousands and tens of thousands, by the millions they arrive, until the landscape is literally alive with them. They seem as numberless as the sands of the sea, but still they come. I have lately been accustomed to seeing great crowds, but this one surpasses by far anything I have seen. It is almost impossible to believe they are all human beings.

At last the milling and hurrying about subsides somewhat, and inspectors are seen going about, making sure that all are in their proper stations.

On the platform I take my place with the Mayor and his Staff inside the blue ring as indicated on the chart; and the two bands take up positions in the proper squares. All eyes are turned toward the east.

Binoculars and telescopes are much in evidence. For a little time nothing happens. But now a great dim bulk appears in the sky, and of a sudden the sun is blotted out, causing a gloom like that of an eclipse. Gradually the shadowy shape becomes more distinct and looms larger and larger. But it continues to mount higher and higher until the sun presently appears beneath it; and moving with incredible speed it passes directly over our heads at a great height, while we all hold our breath.

It comes to a wavering halt and begins to settle toward us; and now, in the full light of the sun, details are visible.

It resembles an earth in miniature; a great globe miles and miles in diameter, with distinct land surfaces, with green fields interspersed with water areas sparkling and shimmering in the sunlight. We make out cities, the buildings of which even in the distance appear tremendously tall and gigantic, and long stretches of forest and meadow through which wind silvery rivers.

Down, down it comes, until it touches the ground, with one great bulging side protruding almost above our heads. Now it rises a trifle and shifts this way and that, as though seeking a satisfactory place to settle.

Suddenly there is a great clanging overhead, and something comes tumbling down with a fearsome rush.

Although I have tried to nerve myself for a rather trying experience, I cringe with those around me, half expecting the great thing, whatever it is, to fall upon me.

But it proves to be merely a series of parralel slats bound together with several lines of gigantic chain. The end hangs a little way from the ground and close to the side of our platform.

The great asteroid moves a little this way and that, and the contrivance, which I now recognize as a gang plank, swings against the side of the platform. There is a series of clangs as a number of heavy grapplers engage with the platform's great rings.

The asteroid lifts free of the ground and withdraws to some distance, rolling as it does so until the gangway is at an angle of about thirty degrees from the ground and its distant terminus several miles away. It reminds me of a long suspension bridge. I marvel at its tremendous strength and ability to span such a wide space.

With our glasses we can make out great activity on the planetoid; and presently we see a procession forming on the runway. We can see on the asteroid vast series of grandstands crowded with Cordus.

The procession is made up of a great many cars, all elaborately decorated, and it comes on very quickly. In the lead are two or three low cars loaded with guards armed with polished weapons; then two cars with bands of musicians, followed by the Emperor himself riding in great state with his attendants in a black and gold car.

A dozen other cars are following, and overhead are several air craft, flying low and armed no doubt with magnetizing operators and otherwise provided for any eventuality. But they are of little interest to me. I strain my eyes to see if Corn is with the musicians.

There is what seems to resemble a human form in the front car—yes; it is; a man in blue and gold uniform.

I strive for a better focus of my glass. Yes. It is really he. Good old Corn himself, standing up, trim as a ramrod, holding a white baton and directing the playing of some unfamiliar but very stirring selection, the strains of which still sound very far away.

"GREAT God!" I hear the Mayor beside me ejaculate; "is *that thing* going to be our emperor?" But I am too interested, too elated at seeing my old friend again to make reply.

But all around me and out over the great crowd I hear gasps of astonishment and incredulity as the procession draws near enough to reveal the grotesque shapes of the Emperor and the other Cudors.

The leading cars roll down upon the platform and the guards take their places on the red circle. The bands, still playing, pass to their respective places; blue crosses on the concrete.

The Emperor's own car comes to a halt in the center of the platform.

The attendants put out folding curtains and let down steps, and while other cars are gathered in the background the conveyance is converted into a coronation platform of great splendor.

The Emperor stands erect and scans the great, silent crowd with a glass held first to one and then the other of his two smaller eyes, and looks intently at those on the platform with his single great orb. All his arms except the one holding the glass hang idle against the rigid stem of his tall trunk; the tubby and ungainly lower part of his body, supported by its four short legs, seems almost like some separate creature, serving merely as a conveyance for the tall trunk and head.

At the unfurling of a banner above the Emperor (a prearranged signal), the Mayor and his group, including myself, advance to the border of our ring on the floor and hold up our arms, displaying the rings on our wrists. At the same moment each one of the assembled multitude holds up a hand and presents a number; while our two bands strike up a thunderous din.

The Emperor, disregarding us all, turns toward the asteroid and salutes stiffly. On the asteroid a great commotion of loud noises and waving of banners is set up.

Now comes a small Cudor, bearing the glittering crown on a green cushion. He is followed by a tall individual wearing many long streamers of ribbon. His gait and manner suggest that he is a high priest. As he approaches the Emperor he is followed by dignitaries walking in solemn procession, but appearing very grotesque to us.

After an exchange of ceremonious and impressive gestures, during which we become unconscious of their ungainly shapes, the Emperor drops to a sitting posture, and the priest with great pomp and elaborate gesture places the shining nickel-iron crown on his head.

There is a great flourish of noise from the asteroid and we all hold up our hands as before.

Then from a closed car a man appears bearing a huge megaphone; evidently he is an interpreter for the Emperor, for he takes his place beside him.

The Emperor begins to speak:

"In assuming the duties and privileges of Emperor of New York . . . it is my

purpose to inaugurate a number of reforms . . . ."

I am in no mood to listen to the speech, and I look around for Corn. He is standing beside one of the band cars and beckoning to me.

At the imminent risk of committing a grave offense, I step behind the Mayor and his cabinet and hurry around behind the car, where Corn greets me with a hearty hand-shake.

"Glad to see you still alive, old man," he says, "even if the old world does seem to be in a hell of a mess. I'm in luck," he announced. "I'm going to stay a week. Got a vacation in consideration of services rendered, and am off duty at the end of this performance."

THEN, before I had time to congratulate him, he glanced cautiously around and commenced to speak rapidly in a much lower tone.

"I have discovered the secret of this gravity business; and I have concocted a scheme that I think is going to knock these damned Cordus into a cocked hat.

"They are navigating their asteroid by power from what seems like a giant storage battery. It's two miles long and half as wide. It produces power something like cosmic rays, and affects magnetism and gravitation. The big tank is full of combustible gas."

"In the night I made a hole in the tank by taking out a bolt. Then I stole a long coil of fuse and stuck one end through the hole and lit the other. I figure the fire ought to reach the gas before noon. Watch out for something big."

I saw the Emperor had stopped speaking and hurried back to my place, hoping I was unobserved.

AFTER a little more ceremony, the interpreter reads a brief proclamation and the Emperor prepares to leave.

All stand stiffly at attention, as the cars pass back over the long runway anad gather speed. (It has been decreed that none of the subjects may leave their positions until the asteroid is gone.)

There is a far-away roar of machinery and the runway is quickly rolled up, while the great ball lifts slowly from the ground.

Then of a sudden there is a blinding flash of light and a puff of black smoke far above the grand stands on the asteroid and covering a wide area, followed a moment later by a tremendous crash, and I am bowled over as if by a sudden blow.

* * * * *

AS consciousness returned I was aware of a roaring and gushing sound in my brain, as though a stream of thought were pouring into my emptied mind.

This presently gave way to the sound of voices; at first seemingly far away and indistinct, then close at hand and understandable.

After two or three unsuccessful attempts to open my eyes I succeeded in raising their heavy lids and sat up, to see people all about me—and straight in front of me the great asteroid.

Then I remembered what had happened. The shock of the explosion, the sensation of toppling over, the sudden darkness.

At that moment a group of people a few yards away commenced to point and gesticulate wildly and someone shouted: "Look! Look! It's coming down!"

Indeed the great globe was unmistakably settling jerkily earthward.

As my head cleared I remembered Corn. "Where is Corn?" I asked, looking about. Every one was too excited to pay me any attention.

Struggling up on my knees I plucked a man by the sleeve and shouted, "Where is Corn—the bandmaster—Mr. Cornwallis?"

Withdrawing his attention reluctantly and only momentarily from the asteroid, he pointed to some one lying on the ground at a little distance and half hidden by those around him.

"Help me to him," I begged, trying to get on my shaky legs.

"Wait!" he demanded impatiently; wait!"

But somebody—I have no idea who—put out a hand to steady me, and in a moment I was beside my friend, who, I now perceived, was only one of numbers lying here and there, being ministered to by those about them.

A doctor was just leaving Corn, and as I came up he turned to me, saying: "He's terribly injured. Falling on the staple and ring have caused complications; but he will probably regain consciousness, temporarily at least."

As I sank on my knees beside him Corn moved convulsively and opened his eyes, and, after a moment, fixed them on the asteroid. Then he looked questioningly at me.

"It's coming down," I said.

"Please put something behind me," said Corn; "I want to see it." Some one obliged with a piece of broken chair and an overcoat.

A stretcher was set down beside him. "Don't bother me," directed Corn, waving it away impatiently. "I want to see what's doing. This is *my* show."

"Binoculars," he demanded, holding out his hand to me. Fortunately, mine were still on their strap and I put them into his hand.

He held them to his eyes a moment; then, lowering them, looked at his other hand inquiringly and appealingly; but there was no response. It refused to move.

I HASTENED to help him adjust and hold the glasses, but after a moment he gave it up.

"They blur," he said, rubbing his eyes. "You look—and—tell—me."

"It's coming down, Corn, old man," I said. "It's almost to the ground.

"Near the top there is a great smoking crater that looks like a smoldering volcano."

"—Where the exploded tank was," he put in with evident satisfaction.

I went on. "I can see buildings in ruins and fires in a great many places; and people—Cudors — hurrying madly about.

"There are big cars that look like fire engines, and all sorts of cars tearing about everywhere; and a great many one-man machines are taking to the air. There is a perfect swarm of them. Now it's going to hit the ground! Their gravity machinery must be dead——"

A heavy jar shook the earth like an earthquake; a roar went up from the assembled crowds.

Corn started a little.

"What's it doing now? I can't see it!" He put his hand over his eyes.

"Everything is falling off," I found myself shouting excitedly. "A perfect shower of buildings—machines—everything—tumbling to earth."

"That's good—oh, that's *good*," Corn broke in. "I wonder what they think of subjugating the earth now?"

"It's starting to go to pieces," I declared. "The ground is falling away all the way round . . . "

"Yes, I hear it falling," he exclaimed. "But—it's getting dark." The darkness was only his failing sight.

"Don't strain your eyes trying to see," I admonished hastily. "I will tell you all I see.

"Now the whole outside is coming crashing down. It's changing color. The black and green are all gone, and the

whole thing is a mass of gray stone avalanches.

"It's assuming a peaked shape like a mountain with its slopes all in motion and with clouds of white dust all about."

At that moment the spectators, who had been holding their breath in wonder and suspense, broke into a great shout; commencing in the near by sections and taken up gradually by those farther and farther away, until it seemed to swell from the entire universe. A shout that was half a cry of joy and relief and half a victorious howl of vengeance.

"That's a glorious sound," said Corn. "It's worth all it cost. . . I' m . . . I'm glad I heard it before—before going out. . . Do you think it's all destroyed?" His head sank back and he closed his eyes as though falling asleep.

Just then Mr. Adams, the master of ceremonies, hurried up.

"Please make an announcement," I requested urgently. "Say that the destruction of the enemy was brought about by a time fuse, set to blow up their gas reservoir by Mr. Cornwallis, who is lying here severely, perhaps fatally wounded. . . . Details later."

IN a moment I heard the voice of the announcer coming from the many amplifiers far and near, complying with my directions; and, when he had been heard, another vast roar arose from the various portions of the huge assembly, which seemed to echo back and forth across the landscape, finally merging in one continuous sound.

"What do they say?" asked Corn faintly, opening his eyes once more.

I had thought he was gone.

"They are cheering for you, Corn," I said in a voice that was choked with emotion. "You are the hero of all the ages."

"Well, I suppose I was lucky enough to get something worth while started," he said with a trace of his old smile. . . . "Have you got a cigarette about you?"

I hastily lit one and put it in the hand weakly held out to receive it. But even as he started to put it to his lips his strength seemed to leave him. His hand fell, his head sank back and a deathlike pallor overspread his features.

The doctor, who was just returning, stooped and removed the lighted cigarette from the limp fingers. "I was afraid of it," he said. "He is gone."

* * * * *

IT might have been supposed that, in spite of the total destruction of their planetoid, some of the Cudors—a few at least—would have survived; but destiny ruled that it should be otherwise.

In the midst of the disintegration of the asteroid, it was noticed that, in spite of the fact that the source of their power was destroyed, none of the aircraft maneuvering aloft were attempting to land; but one by one they were coming hurtling down out of the sky to dash themselves and their occupants to fragments on the ground. And the small one-man machines which had risen in such numbers after the explosion only milled about above the great wreck like bees over a hive, until, scorning to fly away, they fell back into the wreckage.

So, too, the flyers who were on the way to or from the Arctic mines or in other remote localities—upon being advised by radio of what was taking place at home, they evidently refrained from landing as was their wont when any mechanical difficulty developed, and stayed aloft as long as possible; then they came crashing down to death and destruction.

As for the mining colony in the Arctic, when an expedition reached there several weeks later, they were all dead, the great shafts were filled up, the ma-

chinery destroyed, and the operators, all gathered in one of the caverns, had died from inhaling some sort of lethal gas.

Whether all these flyers and workers had been prompted to destroy themselves by a fear of retribution on their being taken prisoners, or whether they reasoned that since their planetoid and their whole civilization was gone, life could no longer be worth while, will perhaps always remain a mystery.

At any rate, the race was as extinct as the woolly rhinoceros; and, though the mountainous ruins of their planetoid were delved into by industrious investigators, little of their culture or science could be brought to light.

As for the great fences, they were speedily torn down. Indeed, their destruction was made the occasion for a series of great celebrations. Only one was permitted to remain standing; the first one built in the Chicago district. And this was preserved as a monument; only a part of the inscription being changed.

One passing now sees the legend:

ERECTED BY THE FIRST EMPEROR OF CHICAGO AND PRESERVED BY A RESCUED WORLD IN COMMEMORATION OF THE HEROISM OF THEIR DELIVERER, WILLIAM HOWARD CORNWALLIS.

THE END

In the July Issue

We commence a story by Dr. David H. Keller entitled "Life Everlasting," which is one of his very best efforts.

We also have a story by an author new to our readers, George H. Scheer, Jr., entitled "Beam Transmission."

Bob Olsen favors us with one of his Fourth Dimension stories, entitled "Four Dimensional Auto Parker."

The Choice

By RALPH MAUGHAN

NO one would have recognized Dr. Harley in the pale, wide-eyed man who tore open the door of the taxi and leapt to the curb. Composed and unruffled, the eminent physician was accustomed to fight death daily by a score of bedsides. His quiet capability had communicated itself to thousands of the sick and dying; soothing their panic, giving them the will to live. But Dr. Harley was now discovering that it was different when the dying man was your only son.

This time he was helpless; he, who had so often given his skill to free so many from the very grasp of death, was now powerless to save the one being whose life meant more to him than his own life; he could do nothing for the son who was to carry on his work. His only hope lay in his oldest friend, Robert Bennett.

Thirty-two years before, Harley and Bennett had graduated together from medical school, Harley to take up a practice and achieve well-deserved fame. But Robert Bennett hid himself away from the world in his laboratory, and for thirty-two years had ruthlessly spent his private fortune and his failing health, ceaselessly driving a frail body, as he groped his way toward the discovery of a serum which would cure the dread disease known as meningitis.

For several weeks Harley had known that his old friend had been working feverishly, night and day, on what, after years of heartbreaking disappointment, he believed to be the right track. Only two nights ago Bennett had said to him, quietly, "Allan, I'm practically certain that at last I've got it—and—it's about time."

Harley knew what his friend had meant when he said it was about time, and he was too wise to protest. As physicians they both knew that Bennett's heart could not long survive the pace at which it was being driven.

And then, only the night before, young Allan had retired early with a raging headache. This morning he had been found in semi-conscious torture. For one of Harley's skill the diagnosis was easy. For all the doctors in the world, the cure was impossible.

He knew how it had happened. Young Allan had been accustomed to spend many of his leisure hours in his "Uncle Robert's" laboratory, helping where he could, and always watching the progress of the experiments with absorbed interest. There had been many cultures in the laboratory, innocent-looking little glass tubes, alive with the deadly meningitis germ which Robert Bennett had segregated. And now Harley knew that his son was dying, unless——

Breathlessly, Harley ran up the steps of his friend's house, and let himself in at the door. In a numb agony of forelorn hope he made his way back to the laboratory. There were still a few hours. Would Robert Bennett's work of thirty-two years have been finished in time? There was just a chance, and on that slender chance depended his son's life.

Bursting into the laboratory, Harley found himself confronted, face to face, by his friend. Bennett was holding a

test tube, half filled with a perfectly colorless liquid. Very carefully, and with a hand that shook almost uncontrollably, he set it down in a rack on the desk in front of him.

"There it is, Allan," he whispered exultantly, "finished—finished——" and before Harley's eyes, with a spasm of pain convulsing his features, Bennett collapsed in a heap on the floor.

In an instant Harley was beside him, unbuttoning his friend's shirt and waistcoat. The eyes opened and sought Harley's urgently.

"The formula, Allan," whispered Bennett, so faintly that Harley could scarcely distinguish the words, "—the formula. Quick—write it down. It is —it is——"

With a sharp intake of breath the whisper ceased and the eyes closed again. It did not take Harley long to confirm what he already knew to be true. Robert Bennett was dead in the hour of his triumph. The overworked heart which had been driven through years of unremitting labor had failed to survive the shock of victory, the climax of a life of self-sacrificing toil to confer a lasting benefit on mankind.

Slowly Dr. Harley rose to his feet and stared dazedly at the still form of Robert Bennett—at the little half-filled test tube on the desk. It was only very gradually, as his mind cleared by degrees, that the awful truth of what he faced was revealed to him.

The formula for the precious substance that would in the course of years miraculously reprieve thousands and thousands of sufferers from a hideous death—that formula lay mute, locked in a dead man's brain. But the contents of that little test tube might be analyzed, recorded, reproduced at will and in any quantity for the benefit of this generation and those to come. It would be a task that any expert chemist could perform in a few days.

In a few days! In a few hours the raging disease would have burnt its course through his son's pain-wracked body. Harley knew the consequences to expect. There was never a recovery. Nine chances out of ten the result was death in agony. The tenth chance—Harley shuddered at the thought—was that his son would be a gibbering imbecile for life. The disease seared out the brain, even in those rare cases where it did not mercifully take life. There, on the desk, in those few drops of clear liquid, lay life and sanity for his son, the boy who was destined to follow after Harley and, as a physician, serve humanity in his turn.

In one dreadful moment Harley actually wished that his son were already dead, that he might be spared a decision which was too much to ask of any man. But he knew that there were still a few hours. He must decide.

For many minutes Harley stood motionless, staring with unseeing eyes. Then, very deliberately, he picked the little test tube out of its rack, put a stopper in it, wrapped it in his pocket handkerchief, and walked slowly out of the room. But as he left he carefully avoided looking on the peaceful face of his dead friend.

THE END

Measuring a Meridian

Serial in Three Parts—Part II

By JULES VERNE

We have had what may be termed a scientific introduction to one of the great cosmic measurements, measuring the circumference of the earth, a veritable achievement. The work of the scientists goes on and the descriptions of scenery and life in the wilderness, and of the great achievements of one of the party as a hunter, carries us along through the second installment, and we read of the declaration of war between Russia and England, which causes a short division in the party.

Illustrated by MOREY

WHAT WENT BEFORE:

A PARTY of scientists, some Russian and some English, near the time of the Crimean War, go to Africa to measure on its extended plains a segment of the circumference of the earth in order to determine its true circumference. Some of the party are at the beginning of the line to be measured and are awaiting the arrival of a steamboat carrying much of their equipment, which at last comes up the river. The boat is made to be knocked down, so that it can be put in pieces upon ox wagons and be taken from place to place. We are told of the different attempts to measure a meridian, the details of which are of much interest as presented by our author. Especially does he mention the meridian from the Balearic Islands to Dunkirk on the British Channel. This we are told is especially interesting because its termini are so located that the slight departure of the earth from true sphericity is automatically corrected. The methods and history of the different attempts to establish a standard meter based on the measurement of a meridian are described. Coming back to our story, the party starts off to take their measurements and do their triangulations. One of the party is a great hunter and we are told of his successes among the great forms of African game, and we are to hear more about it in the later part of the story. So at last, after the details of this first installment, and which are of great scientific as well as narrative interest, the party of English and Russians start off on the work of measurement, not on the best of terms with each other and with the Crimean War impending.

CHAPTER VIII

The Twenty-fourth Meridian

THE measurement of the base occupied thirty-eight days, from the 6th of March to the 13th of April, and without loss of time the chiefs decided to begin the triangles. The first operation was to find the southern extremity of the arc, and the same being done at the northern extremity, the difference would give the number of degrees measured.

On the 14th they began to find their latitude. Emery and Zorn had already on the preceding nights taken the altitude of numerous stars, and their work was so accurate that the greatest error was not more than 2″, and even this was probably owing to the refraction caused by the changes in the atmospheric strata. The latitude thus carefully sought was found to be 27.951789°. Then they found the longitude, and marked the spot on an excellent large scale map of South Africa, which showed the most recent geographical discoveries, and also the routes of travelers and naturalists, such as the missionary, Livingstone, An-

There pumping up water with his trunk, he began to wash his wounds, uttering plaintive cries.

derson, Magyar, Baldwin, Burchell, and Lichtenstein. They then had to choose on what meridian they would measure their arc. The longer this arc is the less influence have the errors in the determination of latitude. The arc from Dunkirk to Formentera,* on the meridian of Paris, was exactly 9° 56′. They had to choose their meridian with great circumspection. Any natural obstacles, such as mountains or large tracts of water, would seriously impede their operations; but happily this part of Africa seemed well suited to their requirements, since the risings in the ground were inconsiderable, and the few watercourses easily traversed. Only dangers, and not obstacles, need check their labors.

This district is occupied by the Kalahari desert, a vast region extending from the Orange River to Lake Ngami, from lat. 20° S. to lat. 29° S. In width, it extends from the Atlantic on the west as far as long. 25° E. Dr. Livingstone followed its extreme eastern boundary when he traveled as far as Lake Ngami and the Zambesi Falls. Properly speaking, it does not deserve the name of desert. It is not like the sands of the Sahara, which are devoid of vegetation, and almost impassable on account of their aridity. The Kalahari produces many plants; its soil is covered with abundant grass; it contains dense groves and forests; animals abound, wild game and beasts of prey; and it is inhabited and traversed by sedentary and wandering tribes of Bushmen and Bakalaharis, but the true obstacle to its exploration is the dearth of water which prevails through the greater part of the year, when rivers are dried up. However, at this time, just at the end of the rainy season, they could depend upon considerable reservoirs of stagnant water, preserved in pools and rivulets. Such were the particulars given by Mokoum. He had often visited the Kalahari, sometimes on his own account as a hunter, and sometimes as a guide to some geographical exploration.

It had now to be actually considered whether the meridian should be taken from one of the extremities of the base, thus avoiding a series of auxiliary triangles.

After some discussion, it was decided that the southern extremity of the base would serve for a starting-point. It was the twenty-fourth meridian east from Greenwich and extended over seven degrees of latitude, from 20° to 27°, without any apparent natural obstacle. Toward the north it certainly crossed the eastern end of Lake Ngami, but Arago had met with greater difficulties than this when he applied his geodesy to connect the coast of Spain with the Balearic Islands. It was accordingly decided that meridian 24° should be measured, since, if it were afterward prolonged into Europe, a northern arc of the same meridian might be measured on Russian territory.

The astronomers proceeded at once to choose a station which should form the vertex of the first triangle. This was a solitary tree to the right of the meridian, standing on a mound about ten miles away. It was distinctly visible from each extremity of the base, and its slender top facilitated the taking of its bearings. The angle made by the tree with the southeast extremity of the base was first observed with the help of one of Borda's repeating circles.

The two telescopes were adjusted so that their axes were exactly in the plane of the circle, in such a way that their position represented the angular distance between the tree and the northwest extremity of the base. This admirably-constructed instrument corrects

* Formentera is one of the Balearic Islands in the Mediterranean south of Spain

nearly all the errors of observation, and indeed, if the repetitions are numerous, the errors tend to counterbalance and correct each other.

The commission had four repeating circles: two for measuring angles, and two more with vertical circles for obtaining zenith distances, and so calculating in a single night, to the smallest fraction of a second, the latitude of any station. And indeed, in this important survey, it was not only necessary to obtain the value of the angles of the triangles, but also to measure the meridian altitude of the stars, that giving the latitude of each station.

The work began on the 14th of April. Colonel Everest, Zorn, and Palander observed the angle at the southeast extremity of the base, while Strux, Emery and Sir John Murray observed that at the northwest extremity.

Meantime the camp was raised, and the bullocks harnessed, and Mokoum conducted the caravan to the first station as a halting place. Two caravans, with their drivers, accompanied the observers, to carry the instruments. The weather was bright, but had the atmosphere been unfavorable by day, the observations would have been made by night by means of reflectors or electric lamps.

On the first day, the two angles were measured, and the result inscribed on the double register; and the astronomers all met in the evening at the camp which had been formed round the tree which had served for their point of sight. It was an immense baobab, more than 80 feet in circumference. Its syenite-colored bark gave it a peculiar appearance. The whole caravan found room beneath its wide branches, which were inhabited by crowds of squirrels, which greedily devoured the white pulp of its egg-shaped fruit.

Supper was prepared for the Europeans by the ship's cook. There was no lack of venison, for the hunters had scoured the neighborhood, and killed some antelopes; and soon the air was filled with an odor of broiled meat, which still further aroused the appetite of the hungry savants.

After the comforting repast, the astronomers retired to their respective wagons, whilst Mokoum placed sentinels round the camp. Large fires of the dead branches of the baobab burnt throughout the night, and kept at a respectful distance the tawny beasts, who were attracted by the odor of the reeking flesh.

After two hours' sleep, however, Emery and Zorn got up, their observations not yet finished. They must find the altitudes of some stars to determine the latitude of the station, and both regardless of the day's fatigue, stood at their telescopes, and rigorously determined the change of zenith caused by the removal from the first station to the second, while the laugh of the hyena and the roar of the lion resounded over the somber plain.

CHAPTER IX

A Kraal

THE next day operations were continued. The angle made by the baobab with the extremities of the base was measured, and the first triangle solved. Two more stations were chosen to the right and left of the meridian; one formed by a distinct mound, six miles away; the other marked out by a post about seven miles distant.

The triangulation went on uninterruptedly for a month, and by the 15th of May the observers had advanced northward 1°, having formed seven triangles. During this first series of operations, the Colonel and Strux were rarely together. The division of labor

separated them, and the circumstance of their daily work being several miles apart was a guarantee against any dispute. Each evening they returned to their several abodes, and although at intervals discussions arose about the choice of stations, there was no serious altercation. Hence Zorn and his friend were in hopes that the survey would proceed without any open rupture.

After advancing 1° from the south, the observers found themselves in the same parallel with Lattakoo, from which they were distant 35 miles to the west.

Here a large kraal had lately been formed, and, as it was a marked halting-place, Sir John Murray proposed that they should stay for several days. Zorn and Emery could take advantage of the rest to take the altitude of the sun; and Palander would employ himself in reducing the measurements made at different points of sight to the uniform level of the sea. Sir John himself wanted to be free from scientific observations, that he might divert himself with his gun among the fauna of the country. A kraal, as it is termed by the natives of South Africa, is a kind of moving village wandering from one pasturage to another. It is an enclosure comprising ordinarily about thirty habitations, and containing several hundred inhabitants. The kraal now reached was formed by a group of more than sixty huts, enclosed for protection from wild animals by a palisade of prickly aloes, and situated on the banks of a small affluent of the Kuruman. The huts, made of water-proof rush mats fastened to wooden beams, were like low hives. The doorway, protected by a skin, was so small that it could only be entered on hands and knees, and from this, the only aperture, issued such dense wreaths of smoke as would make existence in these abodes problematical to any but a Bochjesman or a Hottentot.

The whole population was roused by the arrival of the caravan. The dogs, of which there was one for the protection of each cabin, barked furiously, and about 200 warriors, armed with assagais, knives and clubs, and protected by their leathern shields, marched forward.

A few words from Mokoum to one of the chiefs soon dispelled all hostile feeling, and the caravan obtained permission to encamp on the very bank of the stream. The Bochjesmen did not even refuse permission to share the pastures, which extended for miles away.

Mokoum, having first given orders for the wagons to be placed in a circle as usual, mounted his zebra, and set off in company with Sir John Murray, who rode his accustomed horse. The hunters took their dogs and rifles, showing their intention of attacking the wild beasts, and went toward the woods.

"I hope, Mokoum," said Sir John, "that you are going to keep the promise you made at the Morgheda Falls, that you would bring me into the best sporting country in the world. But understand, I have not come here for hares and foxes; I can get them at home. Before another hour——"

"Hour!" replied the bushman. "You are rather too fast. A little patience, please. For myself, I am never patient except when hunting, and then I make amends for all my impatience at other times. Don't you know, Sir John, that the chase of large beasts is quite a science. Here you must watch and wait. You must not step or even look too quickly. For my part, I have lain in wait for days together for a buffalo or gems-bok, and if I have had success at last, I have not considered my trouble in vain."

"Very good," replied Sir John, "I can show you as much patience as you can wish; but mind, the halt only lasts for three or four days, and we must lose no time."

"There is something in that," said the bushman, so calmly that Emery would not have recognized his companion of the Orange River; "we will just kill that which comes first, Sir John, antelope or deer, gnu or gazelle, anything must do for hunters in a hurry."

"Antelope or gazelle!" cried Sir John, "why, what more could I ask, my good fellow?"

"As long as your honor is satisfied I have nothing more to say," said the bushman, somewhat ironically. "I thought that you would not let me off with anything less than a rhinoceros or two, or at least an elephant."

"Anything and anywhere," said Sir John, "we only waste time in talking."

The steeds were put to a hand-gallop, and the hunters advanced quickly toward the forest. The plain rose with a gentle slope towards the northeast. It was dotted here and there with shrubs in full bloom, from which isued a viscous resin, transparent and odorous, of which the colonists make a balm for wounds. In picturesque groups rose the "nwanas," a kind of sycamore fig, whose trunks, leafless to the height of 30 or 40 feet, supported a spreading parasol of verdure. Among the foliage chattered swarms of screaming parrots, eagerly pecking the sour figs. Farther on were mimosas with their yellow clusters, "silver trees," shaking their silky tufts, and aloes with spikes so red that they might pass for coral plants torn from the depths of the sea. The ground, enameled with amaryllis with their bluish foliage, was smooth and easy for the horses, and in less than an hour after leaving the kraal, the sportsmen reached the woods. For several miles extended a forest of acacias, the entangled branches scarcely allowing a ray of sunlight to penetrate to the ground below, which was encumbered by brambles and long grass.

The hunters had little difficulty, however, in urging on both horse and zebra, in spite of every obstacle, resting at the recurring glades, to examine the thickets around them. The first day was not very favorable. In vain was the forest scoured; not a single beast stirred, and Sir John's thoughts turned more than once to the plains of Scotland, where a shot is rarely long delayed. Mokoum evinced neither surprise nor vexation; to him it was not a hunt, but merely a rush across the forest.

Towards six in the evening they had to think about returning. Sir John was more vexed than he would allow. Rather than that he, the renowned hunter, should return empty-handed, he resolved to shoot whatever first came within range, and fortune seemed to favor him.

They were not more than three miles from kraal when a hare (of the species called *"lepus rupestris"*) darted from a bush about 150 paces in front of them. Sir John did not hesitate a moment, and sent his explosive ball after the poor little animal.

The bushman gave a cry of indignation at such a ball being employed for such an aim; but the Englishman, eager for his prey, galloped to the spot where the victim fell. In vain! the only vestiges of the hare were the bloody morsels on the ground. Whilst the dogs rummaged in the brush-wood, Sir John looked keenly about, and cried:

"I am sure I hit it!"

"Rather too well," replied the bushman quietly.

And sure enough, the hare had been blown into fragments.

Sir John, greatly mortified, remounted his horse, and returned to camp without uttering another word.

The next day the bushman waited for Sir John Murray to propose another expedition; but the Englishman applied himself for a time to his scientific instruments. For pastime he watched the

occupants of the kraal as they practiced with their bows, or played on the "gorah," an instrument composed of a piece of catgut stretched on a bow, and kept in vibration by blowing through an ostrich feather. He remarked that the women, while occupied in their domestic duties, smoked "matokouane," that is, the unwholesome hemp-plant, a practice indulged in by most of the natives. According to some travelers, this inhaling of hemp increases physical strength to the damage of mental energy; and, indeed, many of the Bochjesmen appeared stupefied from its effects.

At dawn, however, the following day, Sir John Murray was aroused by the appearance of Mokoum, who said, "I think, sir, we may be fortunate enough today to find something better than a hare."

Sir John, not heeding the satire, declared himself ready; and the two hunters, accordingly, were off betimes. This time, Sir John, instead of his formidable rifle, carried a simple gun of Goldwin's, as being a more suitable weapon. True, there was a chance of meeting some prowling beast from the forest; but he had the hare on his mind, and would sooner use small shot against a lion than repeat an incident unprecedented in the annals of sport.

Fortune, to-day, was more favorable to the hunters. They brought down a couple of harrisbucks, a rare kind of black antelope, very difficult to shoot. These were charming animals, four feet high, with long diverging horns shaped like scimitars. The tips of their noses were narrow; they had black hoofs, close soft hair, and pointed ears. Their face and belly, white as snow, contrasted well with their black back, over which fell a wavy mane. Hunters may be proud of such shots, for the harrisbuck has always been the *desideratum* of the Delegorgues, Vahlbergs, Cummings, and Baldwins, and it is one of the finest specimens of the southern fauna of the African continent.

But what made the Englishman's heart beat fastest, was Mokoum's showing him certain marks on the edge of the thick underwood, not far from a deep pool, surrounded by giant euphorbias, and whose surface was dotted with skyblue water-lilies.

"Come and lie in ambush here to-morrow, sir," said Mokoum, "and this time you may bring your rifle. Look at these fresh footprints."

"What are they? Can they be an elephant's?" asked Sir John.

"Yes," replied Mokoum, "and, unless I am mistaken, of a male full-grown."

Eagerly, then, was the engagement made for the following day. Sir John's horse, as they returned, carried the harrisbucks. These fine creatures, so rarely captured, excited the admiration of the whole caravan, and all congratulated Sir John, except perhaps Matthew Strux, who knew little of animals, except the Great Bear, the Centaur, Pegasus, and other celestial fauna.

At four o'clock the next morning, the hunters, attended by their dogs, were already hidden in the underwood. They had discovered by new footmarks that the elephants came in a troop to drink at the pool. Their grooved rifles carried explosive bullets. Silent and still, they watched for about half-an-hour, when they observed a movement in the grove, about fifty paces from the pool. Sir John seized his gun, but the bushman made him a sign to restrain his impatience. Soon large shadows appeared: the thickets rustled under the violence of some pressure; the brushwood snapped and crackled, and the sound of loud breathing was audible through the branches. It was the herd of elephants. Half a dozen gigantic creatures, almost as large as those of India, advanced slowly toward the pool. The increasing daylight allowed Sir John, struck with ad-

miration, to notice especially a male of enormous size. His colossal proportions appeared in the partial light even greater than they really were. While his trunk was extended above the underwood, with his curved tusks he struck the great stems, which groaned under the shock. The bushman leant down close to Sir John's ear, and whispered:

"Will he suit you?"

Sir John made a sign of affirmation.

"Then," said Mokoum, "we will separate him from the rest."

At this instant, the elephants reached the edge of the pool, and their spongy feet sank into the soft mud. They pumped up the water with their trunks, and poured it into their throats with a loud gurgling. The great male looked uneasily about him, and seemed to scent some approaching danger.

Suddenly the bushman gave a peculiar cry. The dogs barking furiously, darted from concealment, and rushed toward the herd. At the same moment Mokoum, charging his companion to remain where he was, went off on his zebra to intercept the elephant's retreat. The animal made no attempt to take flight, and Sir John, with his finger on the lock of his rifle, watched him closely. The brute beat the trees, and lashed his tail furiously, showing signs not of uneasiness, but of anger. Now, for the first time, catching sight of his enemy, he rushed upon him at once.

Sir John was about sixty paces distant; and crackled, and the sound of loud forty paces, he aimed at his flank and fired. But a movement of the horse made his aim unsteady, and the ball only entered the soft flesh without meeting any obstacle sufficient to make it explode.

The enraged beast increased its pace, which was rather a rapid walk than a run, and would have soon distanced the horse. Sir John's horse reared, and rushed from the thicket, his master unable to hold him in. The elephant followed, ears erect, and bellowing like a trumpet. Sir John, thus carried away, held on to his horse tightly with his knees and endeavored to slip a cartridge into the chamber of his rifle. Still the elephant gained on him. They were soon beyond the wood, and out on the plain. Sir John vigorously used his spurs, and the two dogs rushed panting in the rear. The elephant was not two lengths behind. Sir John could hear the hissing of his trunk, and almost feel his strong breath. Every moment he expected to be dragged from his saddle by the living lasso. All at once the horse sunk on his hind-quarters, struck by the elephant on his haunches. He neighed, and sprung to one side, thus saving Sir John. The elephant, unable to check his course, passed on, and sweeping the ground with his trunk, caught up one of the dogs, and shook it in the air with tremendous violence. No resource remained except to re-enter the wood, and the horse's instinct carried him thither. The elephant continued to give chase, brandishing the unlucky dog, whose head he smashed against a sycamore as he rushed into the forest. The horse darted into a dense thicket entangled with prickly creepers, and stopped.

Sir John, torn and bleeding, but not for an instant discomposed, turned round, and shouldering his rifle, took aim at the elephant close to the shoulder, through the net-work of creepers. The ball exploded as it struck the bone. The animal staggered, and almost at the same moment a second shot from the edge of the wood struck his left flank. He fell on his knees near a little pool, half hidden in the grass. There, pumping up the water with his trunk, he began to wash his wounds, uttering plaintive cries. The bushman now appeared shouting, "He is ours, he is ours!"

And in truth the animal was mortally wounded. He groaned piteously, and breathed hard. His tail moved feebly, and his trunk, fed from the pool of his blood, poured back a crimson stream on the surrounding brushwood. Gradually his strength failed, and the great beast was dead.

Sir John Murray now emerged from the grove. He was half naked, little of his hunting costume remaining but rags. But he felt as though he could have given his very skin for this triumph.

"A glorious fellow!" he exclaimed, as he examined the carcass; "but rather too big to carry home."

"True, sir," answered Mokoum; "we will cut him up on the spot, and carry off the choice parts. Look at his magnificent tusks! Twenty-five pounds a piece at least! And ivory at five shilling a-pound will mount up."

Thus talking, the hunter proceeded to cut up the animal. He took out the tusks with his hatchet, and contented himself with the feet and trunk, as choice morsels with which to regale the members of the Commission. This operation took some time, and he and his companion did not get back to camp before midday. The bushman had the elephant's feet cooked according to the African method, that is, burying them in a hole previously heated, like an oven, with hot coals.

The delicacy was fully appreciated by all, not excepting the phlegmatic Palander, and Sir John Murray received a hearty round of compliments.

CHAPTER X

The Rapids

DURING their sojourn by the kraal, Colonel Everest and Matthew Strux had been absolutely strangers. On the eve of their departure for their divided labors, they had ceremoniously taken leave one of the other, and had not since met. The caravan continued its northward route, and the weather being favorable, during the next ten days two fresh triangles were measured. The vast verdant wilderness was intersected by streams flowing between rows of the willow-like "karre-hout," from which the Bochjesmen make their bows. Large tracts of desert land occurred, where every trace of moisture disappeared, leaving the soil utterly bare but for the cropping-up occasionally of those mucilaginous plants which no aridity can kill. For miles there was no natural object that could be used for a station, and consequently the astronomers were obliged to erect artificial objects for their point of sight. This caused considerable loss of time, but was not attended with much real difficulty. The crew of the *Queen and Czar* were employed in this part of the work, and performed their task well and rapidly; but the same jealousy, that divided their chiefs, crept in sometimes among the seamen. Zorn and Emery did all they could to neutralize any unpleasantness, but the discussions sometimes took a serious character. The Colonel and Strux continually interfered in behalf of their countrymen, whether they were right or wrong, but they only succeeded in making matters worse. After a while Zorn and Emery were the only members of the party who had preserved a perfect concord. Even Sir John Murray and Nicholas Palander (generally absorbed as they were, the one in his calculations, the other in his hunting), began to join the fray.

One day the dispute went so far that Strux said to the Colonel, "You must please to moderate your tone with astronomers from Poulkowa: remember it was their telescope that showed that the disc of Uranus is circular."

"Yes," replied the Colonel; "but ours

at Cambridge enabled us to classify the nebula of Andromeda."

The irritation was evident, and at times seemed to imperil the fate of the triangulation. Hitherto the discussions had had no injurious effect, but perhaps rather served to keep every operation more scrupulously exact.

ON the 30th the weather suddenly changed. In any other region a storm and torrents of rain might have been expected: angry looking clouds covered the sky, and lightning, unaccompanied by thunder, gleamed through the mass of vapor. But condensation did not ensue—not a drop of rain fell upon the thirsty soil. The sky remained overcast for some days, and the fog rendered the points of sight invisible at the distance of a mile. The astronomers, however, would not lose time, and determined to set up lighted signals and work at night. The bushman prudently advised caution, lest the electric lights should attract the wild beasts too closely to their quarters; and in fact, during the night, the yelp of the jackal and the hoarse laugh of the hyena, like that of a drunken negro, could plainly be heard.

In the midst of this clamor, in which the roar of a lion could sometimes be distinguished, the astronomers felt rather distracted, and the measurements were taken at least less rapidly, if not less accurately. To take zenith distances while gleaming eyes might be gazing at them through the darkness, required imperturbable composure and the utmost *sang-froid*. But these qualities were not wanting in the members of the Commission, and after a few days they regained their presence of mind, and worked away in the midst of the beasts as calmly as if they were in their own observatories. Armed hunters attended them at every station, and no inconsiderable number of hyenas fell by their balls. Sir John thought this way of surveying delightful, and while his eye was at his telescope his hand was on his gun, and more than once he made a shot in the intervals between two observations.

Nothing occurred to check the steady progress of the survey, so that the astronomers hoped before the end of June to measure a second degree of the meridian. On the 17th they found that their path was crossed by an affluent of the Kuruman. The Europeans could easily take their instruments across in their india-rubber canoe; but Mokoum would have to take the caravan to a ford which he remembered some miles below. The river was about half a mile wide, and its rapid current, broken here and there by rocks and trunks of trees embedded in the mud, offered considerable danger to any light craft. Matthew Strux did not fail to represent this, but finding that his companions did not recoil from the attempt, he gave way.

Nicholas Palander alone was to accompany the caravan in its *détour*. He was too much absorbed in his calculations to give any thought to danger; but his presence was not indispensable to his companions, and the boat would only hold a limited number of passengers. Accordingly, he gave up his place to an Englishman of the crew of the *Queen and Czar* who would be more useful under the circumstances.

After making an arrangement to meet to the north of the rapid, the caravan disappeared down the left bank of the stream, leaving Colonel Everest, Strux, Emery, Zorn, Sir John, two sailors, and a Bechjesman, who was the pioneer of the caravan, and had been recommended by Mokoum as having much experience in African rapids.

"A pretty river," observed Zorn to his friend, as the sailors were preparing the boat.

"VERY much so, but hard to cross," answered Emery. "These rapids have not long to live, and therefore enjoy life. With a few weeks of this dry season there will hardly remain enough of this swollen torrent to water a caravan. It is soon exhausted; such is the law of nature, moral and physical. But we must not waste time in moralizing. See, the boat is equipped, and I am all anxiety to see her performances."

In a few minutes the boat was launched beside a sloping bank of red granite. Here, sheltered by a projecting rock, the water quietly bathed the reeds and creepers. The instruments and provisions were put in the boat, and the passengers seated themselves so as not to interfere with the action of the paddles. The Bochjesman took the helm; he spoke but a few words of English, and advised the travelers to keep a profound silence while they were crossing. The boat soon felt the influence of the current. The sailors carefully obeyed every order of the Bochjesman. Sometimes they had to raise their paddles to avoid some half-emerged stump; sometimes to row hard across a whirlpool. When the current became too strong they could only guide the light boat as it drifted with the stream. The native, tiller in hand, sat watchful and motionless, prepared for every danger. The Europeans were half uneasy at their novel situation; they seemed carried away by an irresistible force. The Colonel and Strux gazed at each other without a word; Sir John, with his rifle between his knees, watched the numerous birds that skimmed the water; and the two younger astronomers gazed with admiration at the banks, past which they flew with dizzy speed. The light boat soon reached the true rapid, which it was necessary to cross obliquely. At a word from the Bochjesman, the sailors put forth their strength; but, despite all their efforts they were carried down parallel to the banks. The tiller and paddles had no longer any effect, and the situation became really perilous; a rock or stump of a tree would inevitably have overturned the boat. In spite of the manifest peril, no one uttered a word. The Bochjesman half rose, and watched the direction which he could not control. Two hundred yards distant rose an islet of stones and trees, which it was impossible to avoid. In a few seconds the boat apparently must be lost; but the shock came with less violence than had seemed inevitable. The boat lurched and shipped a little water, but the passengers kept their places. They were astonished to observe that what they had presumed to be a rock had moved, and was plunging about in the rush of the waters. It was an immense hippopotamus, ten feet long, which had been carried by the current against the islet, and dared not venture out again into the rapid. Feeling the shock, he raised and shook his head, looking about him with his strange, dull eyes, and with his mouth wide open, showing his great canine teeth. He rushed furiously on the boat, which he threatened to bite to pieces.

But Sir John Murray's presence of mind did not forsake him. Quietly shouldering his rifle, he fired at the animal near the ear. The hippopotamus did not quit his hold, but shook the boat as a dog would a hare. A second shot was soon lodged in his head. The blow was mortal. After pushing the boat with a last effort off the islet, the fleshy mass sank in the deep water. Before the dismayed voyagers could collect their thoughts, they were whirled obliquely into the rapid. A hundred yards below, a sharp bend in the river broke the current; thither was the boat carried, and was arrested by a violent shock. Safe and sound the whole party

leaped to the bank. They were about two miles below the spot where they had embarked.

CHAPTER XI

Nicholas Palander Is Lost and Found

IN continuing the survey the astronomers had to be on their guard against the serpents that infested the region, venomous mambas, ten to twelve feet long, whose bite would have been fatal.

Four days after the passage of the rapid, the observers found themselves in a wooded country. The trees, however, were not so high as to interfere with their labors, and at all points rose eminences which afforded excellent sites for the posts and the electric lamps. The district, lying considerably lower than the rest of the plain, was moist and fertile. Emery noticed thousands of Hottentot fig-trees, whose sour fruit is much relished by the Bochjesmen. From the ground arose a soft odor from the "kucumakranti," a yellow fruit two or three inches long, growing from bulbous roots like the colchicum, and eagerly devoured by the native children. Here, too, in this more watered country, reappeared the fields of colocynths and borders of the mint so successfully naturalized in England. Notwithstanding its fertility, the country appeared little frequented by the wandering tribes, and not a kraal or a camp-fire was to be seen; yet water was abundant, forming some considerable streams and lagoons.

The astronomers halted to await the caravan. The time fixed by Mokoum had just expired, and if he had reckoned well, he would join them today. The day, however, passed on, and no Bochjesman appeared. Sir John conjectured that the hunter had probably been obliged to ford further south than he had expected, since the river was unusually swollen. Another day passed and the caravan had not appeared. The Colonel became uneasy; he could not go on, and the delay might affect the success of the operations. Matthew Strux said that it had always been his wish to accompany the caravan, and that if his advice had been followed they would not have found themselves in his predicament; but he would not admit that the responsibility rested on the Russians. Colonel Everest began to protest against these insinuations, but Sir John interposed, saying that what was done could not be undone, and that all the recriminations in the world would make no difference.

It was then decided that if the caravan did not appear on the following day, Emery and Zorn, under the guidance of the Bochjesman, should start to ascertain the reason of the delay. For the rest of the day the rivals kept apart, and Sir John passed his time in beating the surrounding woods. He failed in finding any large game, but from a naturalist's point of view he ought to have been satisfied, since he brought down two fine specimens of African birds. One was a kind of partridge, a francolin, thirteen inches long, with short legs, dark gray back, red beak and claws, and elegant wings, shaded with brown. The other bird, with a red throat and white tail, was a species of falcon. The Bochjesman pioneer cleverly took off the skins, in order that they should be preserved entire.

The next day was half over, and the two young men were just about to start on their search, when a distant bark arrested them. Soon Mokoum, on his zebra, emerged at full speed from the thicket of aloes on the left, and advanced toward the camp.

"Welcome," cried Sir John joyfully, "we had almost given you up, and apart

from you I should be inconsolable. I am only successful when you are with me. We will celebrate your return in a glass of usquebaugh."

Mokoum made no answer, but anxiously scanned and counted the Europeans. Colonel Everest perceived his perplexity, and as he was dismounting, said:

"For whom are you looking, Mokoum?"

"For Mr. Palander," replied the bushman.

"Is he not with you?" said the Colonel.

"Not now," answered Mokoum. "I thought I should find him with you. He is lost!"

At these words, Matthew Strux stepped forward.

"Lost!" he said. "He was confided to your care. You are responsible for his safety, and it is not enough to say he is lost."

MOKOUM'S face flushed and he answered impatiently:

"Why should you expect me to take care of one who can't take care of himself? Why blame me? If Mr. Palander is lost, it is by his own folly. Twenty times I have found him absorbed in his figures, and have brought him back to the caravan. But the evening before last he disappeared, and I have not seen him since. Perhaps if you are so clever, you can spy him out with your telescope."

The bushman would doubtless have become more irritable still, if Sir John had not pacified him. Matthew Strux had not been able to get in a word, but now turned round unexpectedly to the Colonel, saying:

"I shall not abandon my countryman. I suppose that if Mr. John Murray or Mr. Emery were lost, you would suspend operations; and I don't see why you should do less for a Russian than for an Englishman."

"Mr. Strux," cried the Colonel, folding his arms, and fixing his eyes on his adversary, "do you wish to insult me? Why should you suppose that we will not seek this blundering calculator?"

"Sir!" said Strux.

"Yes, blundering," repeated the Colonel. "And to return to what you said, I maintain that any embarrassment to the progress of the operations from this circumstance would be due to the Russians alone."

"Colonel," cried Strux, with gleaming eyes, "your words are hasty."

"My words, on the contrary, are well weighed. Let it be understood that operations are suspended until Mr. Palander is found. Are you ready to start?"

"I was ready before you spoke a word," answered Strux sharply.

The caravan having now arrived, the disputants each went to his wagon. On the way Sir John could not help saying:

"It is lucky that the stupid fellow has not carried off the double register."

"Just what I was thinking," said the Colonel.

The Englishmen proceeded more strictly to interrogate Mokoum. He told them that Palander had been missing for two days, and had last been seen alongside of the caravan about twelve miles from the encampment; that after missing him, he at once set out to seek for him, but, being unsuccessful in all his search, had concluded that he must have made his way to his companions.

Mokoum proposed that they should now explore the woods to the northeast, adding that they must not lose an hour if they wanted to find him alive, knowing that no one could wander with impunity for two days in a country infested like that with wild beasts. Where anyone else could find a subsistence, Pal-

ander, ever engrossed by his figures, would inevitably die of starvation. At one o'clock, guided by the hunter, they mounted and left the camp. The grotesque attitudes of Strux, as he clung uneasily to his steed, caused considerable diversion to his companions, who, however, were polite enough to pass no remark.

Before leaving the camp, Mokoum asked the pioneer to lend him his keen-scented dog. The sagacious animal, after scenting a hat belonging to Palander, darted off in a northeasterly direction, whilst his master urged him on by a peculiar whistle. The little troop followed, and soon disappeared in the underwood.

ALL the day the Colonel and his companions followed the dog, who seemed instinctively to know what was required of him. They shouted, they fired their guns, but night came on when they had scoured the woods for five miles around, and they were at length obliged to rest until the following day. They spent the night in a grove, before which the bushman had prudently kindled a wood fire. Some wild howls were heard, by no means reassuring. Hours passed in arguing about Palander, and discussing plans for his assistance. The English showed as much devotion as Strux could desire; and it was decided that all work should be adjourned till the Russian was found, alive or dead.

After a weary night the day dawned. The horses were saddled, and the little troop again followed the dog. Toward the northeast they arrived at a district almost swampy in its character. The small water courses increased in number, but they were easily forded, care being taken to avoid the crocodiles, of which Sir John, for the first time in his life, now saw some specimens. The bushman would not permit that time should be wasted in any attack upon the reptiles, and restrained Sir John, who was always on the *qui-vive* to discharge a ball. Whenever a crocodile, snapping its prey with its formidable jaw, put its head out of water, the horses set off at a gallop to escape.

The troop of riders went on over woods, plains, and marshes, noting the most insignificant tokens; here a broken bough; there a freshly-trodden tuft of grass; or farther on some inexplicable mark; but no trace of Palander.

When they had advanced ten miles north of the last encampment, and were about to turn southeast, the dog suddenly gave signs of agitation. He barked, and in an excited way wagged his tail. Sniffing the dry grass, he ran on a few steps, and returned to the same spot.

"The dog scents something," exclaimed the bushman.

"It seems," said Sir John, "he is on a right track. Listen to his yelping; he seems to be talking to himself. He will be an invaluable creature if he scents out Palander."

Strux did not quite relish the way in which his countryman was treated as a head of game; but the important thing now was to find him, and they all waited to follow the dog, as soon as he should be sure of the scent.

Very soon the animal, with a loud yelp, bounded over the thicket and disappeared. The horses could not follow through the dense forest, but were obliged to take a circuitous path. The dog was certainly on the right track now, the only question was whether Palander was alive or dead.

In a few minutes the yelping ceased, and the bushman and Sir John, who were in advance, were becoming uneasy, when suddenly the barking began again outside the forest, about half a mile away. The horses were spurred in that direction, and soon reached the confines of

the marsh. The dog could distinctly be heard, but, on account of the lofty reeds, could not be seen. The riders dismounted, and tied their horses to a tree. With difficulty they made their way through the reeds, and reached a large space covered with water and aquatic plants. In the lowest part lay the brown waters of a lagoon half a mile square. The dog stopped at the muddy edge, and barked furiously.

"There he is!" cried Mokoum.

And sure enough, on a stump at the extremity of a sort of peninsula, sat Nicholas Palander, pencil in hand, and a notebook on his knees, wrapt in calculations. His friends could not suppress a cry. About twenty paces off a number of crocodiles, quite unknown to him, lay watching, and evidently designing an attack.

"Make haste," said Mokoum, in a low voice; "I don't understand why these animals don't rush on him."

"They are waiting till he is gamey," said Sir John, alluding to the idea common among the natives that these reptiles never touch fresh meat.

THE bushman and Sir John telling his companions to wait for them, passed round the lagoon, and reached the narrow isthmus by which alone they could get near Palander. They had not gone two hundred steps, when the crocodiles, leaving the water, made straight toward their prey. Palander saw nothing, but went on writing.

"Be quick and calm," whispered Kokoum, "or all is lost."

Both, kneeling down, aimed at the nearest reptiles, and fired. Two monsters rolled into the water with broken backs, and the rest simultaneously disappeared beneath the surface.

At the sound of the guns Palander raised his head. He recognized his companions, and ran towards them waving his note-book, and like the philosopher of old exclaiming, "Eureka!" he cried, "I have found it!"

"What have you found?" asked Sir John.

"An error in the last decimal of a logarithm of James Wolston's."

It was a fact. The worthy man had discovered the error, and had secured a right to the prize offered by Wolston's editor. For four days had the astronomer wandered in solitude. Truly Ampère, with his unrivaled gift of abstraction, could not have done better.

CHAPTER XII

A Battle with Lions

SO the Russian mathematician was found! When they asked him how he had passed those four days, he could not tell; he thought the whole story of the crocodiles was a joke, and did not believe it. He had not been hungry; he had lived upon figures. Matthew Strux would not reproach his countryman before his colleagues, but there was every reason to believe that in private he gave him a severe reprimand.

The goedetic operations were now resumed, and went on as usual till the 28th of June, when they had measured the base of the 15th triangle, which would conclude the second and commence the third degree of the meridian. Here a physical difficulty arose. The country was so thickly covered with underwood, that although the artificial signals could be erected, they could not be discerned at any distance. One station was recognized as available for an electric lamp. This was a mountain 1,200 feet high, about thirty miles to the northwest. The choice of this would make the sides of this triangle considerably longer than any of the former, but

it was at length determined to adopt it. Colonel Everest, Emery, Zorn, three sailors, and two Bochjesmen, were appointed to establish the lighted signal, the distance being too great to work otherwise than at night.

The little troop, accompanied by mules laden with the instruments and provisions, set off in the morning. The Colonel did not expect to reach the base of the mountain till the following day, and however few might be the difficulties of the ascent, the observers in the camp would not see the lighted signal till the night of the 29th or 30th.

In the interval of waiting, Strux and Palander went to their usual occupations, while Sir John and the bushman shot antelopes. They found opportunity of hunting a giraffe, which is considered fine sport. Coming across a herd of twenty, but so wild that they could not approach within 500 yards, they succeeded in detaching a female from the herd. The animal set off at first at a slow trot, allowing the horsemen to gain upon her; but when she found them near, she twisted her tail, and started at full speed. The hunters followed for about two miles, when a ball from Sir John's rifle threw her on to her side, and made her an easy victim.

In the course of the next night the two Russians took some altitudes of the stars, which enabled them to determine the latitude of the encampment. The following night was clear and dry, without moon and stars, and the observers impatiently watched for the appearance of the electric light. Strux, Palander, and Sir John relieved guard at the telescope, but no light appeared. They concluded that the ascent of the mountain had offered serious difficulty, and again postponed their observations till the next night. Great, however, was their surprise, when, about two o'clock in the afternoon, Colonel Everest and his companions suddenly reappeared in camp.

In answer to inquiries whether he had found the mountain inaccessible, Colonel Everest replied that although in itself the mountain was entirely accessible, it was so guarded that they had found it necessary to come back for reinforcements.

"Do you mean," said Sir John, "that the natives were assembled in force?"

"Yes, natives with four paws and thick manes, who have eaten up one of our horses."

The Colonel went on to say that the mountain was only to be approached by a spur on the southwest side. In the narrow defile leading to the spur a troop of lions had taken up their abode. These he had endeavored to dislodge, but, insufficiently armed, he was compelled to beat a retreat, after losing one of his horses by a single blow of a lion's paw.

THE recital kindled the interest of Sir John and the bushman. Clearly it was a station worth conquering, and an expedition was at once arranged. All the Europeans, without exception, were eager to join, but it was necessary that some should remain at the camp to measure the angles at the base of the triangle, therefore the Colonel resolved to stay behind with Strux and Palander, while Sir John, Emery, and Zorn (to whose entreaties their chiefs had been obliged to yield), Mokoum, and three natives on whose courage he could rely, made up the party for the attack.

They started at four in the afternoon, and by nine were within two miles of the mountain. Here they dismounted, and made their ararngements for the night. No fire was kindled, Mokoum being unwilling to provoke a nocturnal attack from the animals, which he wished to meet by daylight.

Throughout the night the roar of the lions could almost incessantly be heard.

Not one of the hunters slept for so much as an hour, and Mokoum took advantage of their wakefulness to give them some advice from his own experience.

"From what Colonel Everest tells us," he said calmly, "these are black-maned lions, the fiercest and most dangerous species of any. They rush for a distance of sixteen to twenty paces, and I should advise you to avoid their first bound. Should the first fail, they rarely take a second. We will attack them as they re-enter their den at daybreak; they are always less fierce when they are well filled. But they will defend themselves well, for here, in this uninhabited district, they are unusually ferocious. Measure your distance well before you fire; let the animal approach, and take a sure aim near the shoulder. We must leave our horses behind; the sight of a lion terrifies them, and therefore the safety of their rider is imperiled. We must fight on foot, and I rely on your calmness."

All listened with silent attention: Mokoum was now the patient hunter. Although the lion seldom attacks a man without provocation, yet his fury, when once aroused, is terrible; and therefore the bushman enjoined composure on his companions, especially Sir John, who was often carried away by his boldness.

"Shoot at a lion," said Mokoum, "as calmly as if you were shooting a partridge."

At four o'clock, only a few red streaks being visible in the far east, the hunters tied up their horses securely and left their halting-place.

"Examine your guns, and be careful that your cartridges are in good trim," continued Mokoum, to those who carried rifles; for the three natives were armed otherwise, satisfied with their bows of aloe, which already had rendered them good service.

The party, in a compact group, turned towards the defile, which had been partially reconnoitered the evening before. They crept, like Red Indians, silently between the trees, and soon reached the narrow gorge which formed the entrance. Here, winding between piles of granite, began the path leading to the first slopes of the spur. Midway the path had been widened by a landslide and here was the cave tenanted by the lions.

It was then arranged that Sir John, one of the natives, and Mokoum, should creep along the upper edge of the defile, with the intention of driving out the animals to the lower extremity of the gorge. There the two young Europeans and the other two Bochjesmen should be in ambush to receive the fugitive beasts with shot and arrows.

No spot could be better adapted for the maneuvers. The forked branches of a gigantic sycamore afforded a safe position, since lions do not climb and the hunters perched at a considerable height, could escape their bounds and aim at them under favorable conditions.

William Emery objected to the plan as being dangerous for Sir John and the bushman, but the latter would hear of no modification, and Emery reluctantly acquiesced.

Day now began to dawn, and the mountain-top was glowing in the sun. Mokoum, after seeing his four companions installed in the sycamore, started off with Sir John and the Bochjesman, and soon mounted the devious path which lay on the right edge of the defile. Cautiously examining their path, they continued to advance. In the event of the lions having returned to their den and being at repose, it would be possible to make short work of them.

AFTER about a quarter of an hour the hunters, reaching the landslide before the cave to which Zorn had di-

rected them, crouched down and examined the spot. It seemed a wide excavation, though at present they could hardly estimate the size. The entrance was marked by piles of bones and remains of animals, demonstrating, beyond doubt, that it was the lions' retreat.

Contrary to the hunter's expectation, the cave seemed deserted. He crept to the entrance and satisfied himself that it was really empty. Calling his companions, who joined him immediately, he said:

"Our game has not returned, Sir John, but it will not be long: I think we had better install ourselves in its place. Better to be besieged than besiegers, especially as we have an armed succor at hand. What do you think?"

"I am at your orders, Mokoum," replied Sir John.

All three accordingly entered. It was a deep grotto, strewn with bones and stained with blood. Repeating their scrutiny, lest they should be mistaken as to the cave being empty, they hastened to barricade the entrance by piling up stones, the intervening spaces being filled with boughs and dry brushwood. This only occupied a few minutes, the mouth of the cave being comparatively narrow. They then went behind their loopholes, and awaited their prey, which was not long in coming. A lion and two lionesses approached within a hundred yards of the cave! The lion, tossing his mane and sweeping the ground with his tail, carried in his teeth an antelope, which he shook with as much ease as a cat would a mouse. The two lionesses frisked along at his side.

Sir John afterwards confessed that it was a moment of no little trepidation; he felt his pulses beat fast, and was conscious of something like fear, but he was soon himself again. His two companions retained their composure undisturbed.

At the sight of the barricade, the beasts paused. They were within sixty paces. With a harsh roar from the lion, they all rushed into the thicket on the right, a little below the spot where the hunters had first stopped. Their tawny backs and gleaming eyes were distinctly visible through the foliage.

"The partridges are there," whispered Sir John; "let us each take one."

"No," answered Mokoum softly, "the brood is not all here, and the report of a gun would frighten the rest. Bochjesman, are you sure of your arrow at this distance?"

"Yes, Mokoum," said the native.

"Then aim at the male's left flank, and pierce his heart."

The Bochjesman bent his bow, and the arrow whistled through the brushwood. With a loud roar, the lion made a bound and fell. He lay motionless, and his sharp teeth stood out in strong relief against his blood-stained lips.

"Well done, Bochjesman!" said Mokoum.

At this moment the lionesses, leaving the thicket, flung themselves on the lion's body. Attracted by their roar, two other lions and a third lioness appeared round the corner of the defile. Bristling with anger, they looked twice their ordinary size, and bounded forward with terrific roars.

"Now for the rifles," cried the bushman, "we must shoot them on the wing, since they will not perch."

The bushman took deliberate aim, and one lion fell, as if it were paralyzed. The other, his paw broken by Sir John's bullet, rushed towards the barricade, followed by the infuriated lionesses. Unless the rifles could now be brought successfully to bear, the three animals would succeed in entering their den. The hunters retired; their guns were quickly reloaded; two or three lucky shots, and all would be well; but an unforeseen

circumstance occurred which rendered the hunters' situation to the last degree alarming.

All at once a dense smoke filled the cave. One of the wads, falling on the dry bushwood, had set it alight, and soon a sheet of flames, fanned by the wind, lay between the men and the beasts. The lions recoiled, but the hunters would be suffocated if they remained where they were. It was a terrible moment, but they dared not hesitate.

"Come out! come out!" cried Mokoum.

THEY pushed aside the brushwood with the butt ends of their guns, knocked down the stones, and, half choked, leaped out of the cloud of smoke.

The native and Sir John had hardly time to collect their senses when they were both knocked over. The African, struck on the chest by one of the lionesses, lay motionless on the ground; Sir John, who received a blow from the tail of the other, thought his leg was broken, and fell on his knees. But just as the animal turned upon him, a ball from the bushman arrested her, and, meeting a bone, exploded in her body. At this instant Zorn, Emery, and the two Bochjesmen appeared opportunely, although unsummoned, hastening up the defile. Two lions and one lioness were dead; but two lionesses and the lion with the broken paw were still sufficiently formidable. The rifles, however, performed their duty. A second lioness fell, struck in both head and flank. The third lioness and the wounded lion bounded over the young men's heads, and amid a last salute of balls and arrows disappeared round the corner of the defile.

Sir John uttered a loud hurrah. The lions were conquered, four carcasses measured the ground.

With his friend's assistance, Sir John was soon on his feet again; his leg was not broken. The native soon recovered his consciousness, being merely stunned by the blow from the animal's head. An hour later, the little troop, without further trace of the fugitive couple, regained the thicket where they had left their horses.

"Well," said Mokoum to Sir John, "I hope you like our African partridges."

"Delightful! delightful!" said Sir John, rubbing his leg, "but what tails they have, to be sure!"

CHAPTER XIII

A Disagreement and Its Solution

AT the camp Colonel Everest and his colleagues, with a natural impatience, anxiously abided the result of the lion hunt. If the chase proved successful, the light would appear in the course of the night. The Colonel and Strux passed the day uneasily; Palander, always engrossed, forgot that any danger menaced his friends. It might be said of him, as of the mathematician Bouvard, "He will continue to calculate while he continues to live"; for apart from his calculation life for him would have lost its purpose.

The two chiefs certainly thought quite as much of the accomplishment of their survey as of any danger incurred by their companions; they would themselves have braved any peril rather than have a physical obstacle arrest their operations.

At length, after a day that seemed interminable, the night arrived. Punctually every half-hour the Colonel and Matthew Strux silently relieved guard at the telescope, each desiring to be first to discover the light. But hours passed on, and no light appeared. At last, at a quarter to three, Colonel Everest arose, and calmly said, "The signal!"

The Russian, although he did not utter a word, could scarcely conceal his chagrin which he felt at chance favoring the Colonel.

The angle was then carefully measured, and was found to be exactly 73° 58′ 42.413″.

Colonel Everest being anxious to join his companions as soon as possible, the camp was raised at dawn, and by midday all the members of the Commission had met once more. The incidents of the lion-hunt were recounted, and the victors heartily congratulated.

During the morning Sir John, Emery, and Zorn had proceeded to the summit of the mountain, and had thence measured the angular distance of a new station situated a few miles to the west of the meridian. Palander also announced that the measurement of the second degree was complete.

For five weeks all went on well. The weather was fine, and the country, being only slightly undulating, offered fair sites for the stations. Provisions were abundant, and Sir John's revictualing expeditions provided full many a variety of antelopes and buffaloes. The general health was good, and water could always be found. Even the discussions between the Colonel and Strux were less violent, and each seemed to vie with the other in zeal for success, when a local difficulty occurred which for a while hindered the work and revived hostilities.

It was the 11th of August. During the night the caravan had passed through a wooded country, and in the morning halted before an immense forest extending beyond the horizon. Imposing masses of foliage formed a verdant curtain which was of indescribable beauty. There were the "gounda," the "mosokoso," and the "mokoumdon," a wood much sought for shipbuilding; great ebony trees, their bark covering a perfectly black wood; "bauhinias," with fiber of iron; "buchneras," with their orange-colored flowers; magnificent "roodeblatts," with whitish trunks, crowned with crimson foliage, and thousands of "guaiacums," measuring fifteen feet in circumference. There was ever a murmur like that of the surf on a sandy coast; it was the wind, which, passing across the branches, was calmed on the skirts of the forest. In answer to a question from the Colonel, Mokoum said, "It is the forest of Rovouma."

"What is its size?"

"It is about forty-five miles wide, and ten long."

"How shall we cross it?"

"Cross it we cannot," said Mokoum. "There is but one resource: we must go round either to the east or to the west."

At this intelligence the chiefs were much perplexed. In the forest they could not establish stations; to pass round would involve them in an additional series of perhaps ten auxiliary triangles.

HERE was a difficulty of no little magnitude. Encamping in the shade of a magnificent grove about half a mile from the forest, the astronomers assembled in council. The question of surveying across the mass of trees was at once set aside, and it now remained to determine whether they should make the circuit to the east or the west, since the meridian passed as nearly as possible through the center of the forest. On this point arose a violent discussion between the Colonel and Strux. The two rivals renewed their old animosity, and the discussion ended in a serious altercation. Their colleagues attempted to interfere, but to no purpose. The Englishman wished to turn to the right, since that direction approached the route taken by Dr. Livingstone in his expedition to the Zambesi Falls, and the country would on that account be more

known and frequented. The Russian, on the contrary, insisted on going to the left, but apparently for no other reason than to thwart the Colonel. The quarrel went so far that a separation between the members of the Commission seemed imminent. Zorn, Emery, Sir John, and Palander withdrew and left their chiefs to themselves. Such was their obstinacy that it seemed as if the survey must continue from this point in two oblique series of triangles.

The day passed away without any reconciliation, and the next morning Sir John, finding matters still in the same condition, proposed to Mokoum to beat the neighborhood. Perhaps meanwhile the astronomers would come to an understanding; anyway, some fresh venison would not be despised.

Mokoum, always ready, whistled to his dog Top, and the two hunters ventured several miles from the encampment. The conversation naturally turned on the subject of the difficulty.

"I expect," said the bushman, "we shall be encamped some time here. Our two chiefs are like ill-paired oxen, one pulls one way and the other another, and the consequence is that the wagons make no headway."

"It is all very sad," answered Sir John, "and looks like a separation. The interests of science are compromised, otherwise I should be indifferent to it all. I should amuse myself with my gun until the rivals made it up."

"Do you think they *will* make it up? For my part, I am almost afraid that our halt will be indefinitely prolonged."

"I fear so, Mokoum," replied Sir John. "The matter is so trivial, and it is no question of science. Our chiefs would doubtless have yielded to a scientific argument, but they will never make a concession in a pure matter of opinion. How unfortunate that the meridian happens to cross this forest!"

"Hang the forest!" exclaimed the bushman. "Don't let them stop your measuring, if you want to measure. But I can't see the good of your getting at the length and breadth of the earth? Who will be any better off when everything is reduced to feet and inches? I should just like to think of the globe as infinite; to measure it is to make it small. No, Sir John, if I were to live forever, I could never understand the use of your operations."

Sir John could not help smiling. They had often debated the subject, and the ignorant child of nature could evidently not enter into the interest attached to the survey. Whenever Sir John attempted to convince him, he answered eloquently with arguments stamped with a genuine naturalness, of which Sir John, half *savant* and half hunter, could fully appreciate the charm.

Thus conversing, the hunters pursued the rock-hares, the shrill-toned plovers, the partridges (with brown, yellow and black plumage), and other small game. But Sir John had all the sport to himself. The bushman seldom fired; he was pre-occupied. The quarrel between the two astronomers seemed to trouble him more than it did his companion, and the variety of game hardly attracted his notice. In truth there was an idea floating through his brain, which, little by little, took more definite form. Sir John heard him talking to himself, and watched him as he quietly let the game pass by, as engrossed as Palander himself. Two or three times in the course of the day he drew near Sir John and said, "So you really think that Colonel Everest and Mr. Strux will not come to terms?"

Sir John invariably replied that agreement seemed unlikely, and that he feared there would be a separation between Englishmen and Russians. The last time Mokoum received this answer he added:

"Well, you may be easy; I have found a means to satisfy both the chiefs. Before to-morrow, if the wind is favorable, they will have nothing to quarrel about."

"What do you mean to do, Mokoum?"

"Never mind, Sir John."

"Very well, I will leave it to you. You deserve to have your name preserved in the annals of science."

"That would be too great an honor for me, Sir John," answered the bushman, and then continued silently to ponder over his project. Sir John made no further inquiries, but could not at all guess how the bushman proposed to reunite the two adversaries.

Towards evening the hunters returned to camp, and found matters even worse than before. The oft-repeated intervention of Zorn and Emery had been of no avail, and the quarrel had now reached such a height that reconciliation seemed impossible. It appeared only too probable that the survey would be continued in two separate directions. The thought of this was sorrowful to Emery and Zorn, who were now so nearly bound by mutual sympathy. Sir John guessed their thoughts, and was eager to reassure them; but however much he was secretly disposed to trust to the bushman, he abstained from raising any hopes which might be fallacious.

Throughout the evening Mokoum did not leave his ordinary occupations. He arranged the sentinels, and took the usual precautions. Sir John began to think that he had forgotten his promise. Before going to rest he tried to sound Colonel Everest, whom he found immovably resolved that, unless Strux yielded, the English and Russians must part. "There are things," added the Colonel, in a tone of decision, "that cannot be borne; even from a colleague."

Sir John, very uneasy, retired to his bed, and being fatigued with his day's sport, was soon asleep. Towards eleven o'clock he was suddenly aroused by the natives running to and fro in the camp. He quickly rose, and found everyone on their feet. The forest was on fire. In the dark night, against the black sky, the curtain of flame seemed to rise to the zenith; and in this incredibly short time the fire had extended for several miles.

Sir John looked at Mokoum, who, standing near, made no answer to his glance; but he at once understood. The fire was designed to open a road through that forest which had stood impervious for ages. The wind, from the south, was favorable. The air, rushing as from a blower, accelerated the conflagration, and furnished an ever fresh supply of oxygen. It animated the flames, and kept the kindled branches burning like a myriad brands. The scattered fragments became new centers for fresh outbreaks of flame; the scene of the fire became larger, and the heat grew intense. The dead wood piled under the dark foilage crackled, and ever and anon louder reports and brighter light told that the resinous trees were burning like torches. Then followed explosions like cannonades, as the great trunks of ironwood burst asunder with a reverberation as of bombs. The sky reflected the glow, and the clouds carried the rosy glare h'gh aloft. Showers of sparks emitted from the wreaths of smoke studded the heavens like red-hot stars.

Then, on every side, were heard the howls, shieks, and bellowings of herds of bewildered hyenas, buffaloes, and lions; elephants rushed in every direction, like huge dark specters, and disappeared beyond the horizon.

The fire continued throughout the following day and night; and when day broke on the 14th a vast space, several miles wide, had been opened across the forest. A passage was now free for the meridian. The daring genius of

Mokoum had arrested the disaster which threatened the survey.

CHAPTER XIV

War Interrupts

ALL pretext for quarreling being now removed, the Colonel and Strux, somewhat rancorous at heart, recommenced their joint labors. About five miles to the left of the gap made by the conflagration, rose an eminence which would serve as the vertex of a new triangle. When the requisite observations were complete, the caravan set off acrosss the burnt forest.

The road was paved with embers. The soil was still burning, and here and there smouldered stumps of trees, while a hot steam rose around. In many places lay the blackened carcasses of animals which had been unable to make their escape. Wreaths of smoke gave evidence that the fire was not yet extinct, and might still be rekindled by the wind. Had the flames burst out again the caravan must inevitably have been destroyed. Toward the middle of the day, however, it was safely encamped at the foot of the hill. Here was a mass of rock which seemed to have been arranged by the hand of man. It was a kind of cromlech—a surprising erection to find in that locality—resembling the structures attributed to the Druids, and which ever furnish fresh interest to the archæologist. The most credible suggestion was that it must be the remains of some primitive African altar.

The two young astronomers and Sir John Murray wished to visit the fantastic construction, and, accompanied by the bushman, they ascended the slope. They were not above twenty paces from the cromlech when a man, hitherto concealed behind one of the massy stones at the base, appeared for a moment, and, descending the hill, stole quickly away into a thicket that had been untouched by the fire. The momentary glance was enough for the bushman. "A Makololo!" he cried, and rushed after the native. Sir John followed, and both in vain searched the wood. The native, knowing the short paths, had escaped where the most experienced hunter could not have traced him. When the incident was related to Colonel Everest he sent for Mokoum, and asked him who the man was? what he was doing? and why he had followed him?

"He is a Makololo, Colonel," replied Mokoum. "He belongs to one of the northern tribes that haunt the affluents of the Zambesi. Not only is he an enemy of us Bochjesmen, but he is a plunderer of all who venture into the country; he was spying us, and we shall be lucky if we have not cause to regret that we couldn't get hold of him."

"But what have we to fear from a band of robbers?" asked the Colonel; "are not our numbers sufficient to resist them?"

"At present, yes," replied the bushman! "but in the north these tribes are more frequent, and it is difficult to avoid them. If this Makololo is a spy, as I suspect, he will not fail in putting several hundreds of these robbers on our track, and then, Colonel, I would not give a farthing for all your triangles."

The Colonel was vexed. He knew that the bushman was not the man to exaggerate danger, and that all he said ought to be duly weighed. The intentions of the native were certainly suspicious; his sudden appearance and immediate flight showed that he was caught deliberately spying. No doubt he would announce the approach of the Commission to the tribes of the north. There was, however, no help for it now; the caravan must continue its march with extra precautions.

On the 17th of August the astronomers completed their twenty-second triangle, and with it the third degree of the meridian. Finding by the map that the village of Kolobeng was about 100 miles to the northeast, they resolved to turn thither for a few days's rest. For nearly six months they had had no communication with the civilized world, and at Kolobeng, an important village and missionary station, they would probably hear news from Europe, besides being enabled to pre-provision the caravan.

THE remarkable cromlech was at once chosen as the landmark whence subsequent operations should commence, and the Colonel gave the signal for departure. With no further incident the caravan reached Kolobeng on the 22d. The village was merely a mass of native huts, the uniformity of which was relieved by the dépôt of the missionaries who had settled there. Formerly called Lepelolé, it is marked on some maps Litoubarouka. Here Dr. Livingstone stayed for some months in 1843, to learn the habits of the Bechuanas, or Bakouins, as they are more generally termed in this part of the country.

With all hospitality the missionaries received the Europeans, and put every available resource at their disposal. Livingstone's house was still to be seen, sacked and ruined, as when visited by Baldwin; the Boërs had not spared it in their incursion of 1852.

All eagerly asked for news from Europe; but their curiosity could not be immediately satisfied, as no courier had reached the mission in the last six months; but in about a week the principal said they expected journals and dispatches, since they had already heard of the arrival of a carrier on the banks of the Upper Zambesi. A week was just the period that the astronomers desired for their rest, and all except Palander, who constantly revised his calculations, passed the time in a complete *far niente*. The stern Matthew Strux held himself aloof from his English colleagues, and Emery and Zorn took many walks in the neighborhood. The firmest friendship united these two, and they believed that nothing could break the closeness of their sympathy.

On the 30th the eagerly-expected messenger arrived. He was a native of Kilmaine, a town by the delta of the Zambesi. A merchantman from the Mauritius, trading in gum and ivory, had landed on that coast early in July, and delivered the dispatches for the missionaries. The papers were dated two months back, for the native had taken four weeks to ascend the Zambesi.

On the arrival of the messenger, the principal of the mission had handed to Colonel Everest a bundle of European newspapers, chiefly the *Times*, *the Daily News*, and the *Journal des Débats*. The intelligence they contained had, under the circumstances, a special importance, and produced an unexpected emotion among the entire party.

The members of the Commission were all together in the chief room of the mission. Colonel Everest drew out the *Daily News* for the 13th of May, with the intention of reading aloud to his colleagues. Scarcely had he glanced at the first leading article, when his brow contracted, and the paper trembled in his hand. In a few moments he recovered his usual composure.

"What does the paper say, Colonel?" asked Sir John.

"It is grave news, gentlemen," said the Colonel, "that I have to communicate."

He kept the paper in his hand, and his colleagues waited eagerly for him to speak. To the surprise of all he rose, and, advancing to Matthew Strux, said:

"Before communicating the intelligence

conveyed in this paper, I should wish to make an observation to you."

"I am ready to hear anything you may say," said Strux, much astonished.

The Colonel then said solemnly:

"Mr. Strux, hithero there has been between us a rivalry more personal than scientific, which has rendered our co-operation in the common cause somewhat difficult. This, I believe is to be attributed to the fact of their being *two* of us at the head of this expedition. To avoid antagonism, there should be only one chief to every enterprise. You agree with me, do you not?"

Strux bowed in assent. The Colonel went on:

"This position, unpleasant for each of us, must, through recent circumstances, now be changed. First, sir, let me say that I esteem you highly, as your position in the scientific world demands. I beg you to believe that I regret all that has passed between us."

These words were uttered with great dignity, even with pride. There was no humiliation in the voluntary apology, so nobly expressed, and neither Strux nor his colleagues could guess his motive. Perhaps the Russian, not having the same incentive, was not equally disposed to forget any personal resentment. However, mastering his ill-feeling, he replied:

"With you, Colonel, I think that no rivalry on our part should be permitted to injure the scientific work with which we are entrusted. I likewise hold *you* in the esteem that your talents deserve, and in future I will do all in my power to efface any personality from our relations. But you spoke of a change; I do not understand——"

"You will soon be made to understand, Mr. Strux," replied the Colonel, with a touch of sadness in his tone, "but first give me your hand."

"Here it is," rejoined Strux, with a slight hesitation. Without another word the astronomers joined hands as friends.

"Now you are friends," cried Sir John.

"Alas! no," said the Colonel, dropping the Russian's hand; "henceforth we are enemies, separated by an abyss which must keep us apart even on the territory of science."

Then turning to his colleagues, he added:

"Gentlemen, war is declared between England and Russia. See, the news is conveyed by these English, French, and Russian newspapers."

AND, in truth, the war of 1854 had begun. The English, with their allies the French and Turks, were fighting before Sebastopol, the Eastern question was being submitted to the ordeal of a naval conflict on the Black Sea.

The Colonel's words fell like a thunderbolt. The English and Russians, with their strong sentiment of nationality, started to their feet. Those three words, "War is declared," were enough. They were no longer companions united in a common labor, but already eyed one another as avowed antagonists. Such is the influence of these national duels on the heart of man. An instinctive impulse had divided the Europeans—Nicholas Palander himself yielding to the feeling: Emery and Zorn alone regarded each other with more of sadness than animosity, and regretted that they had not shaken hands before Colonel Everest's communication. No further conversation ensued; exchanging bows, English and Russians retired.

This novel situation, although it would not interrupt the survey, would render its continuation more difficult. For the interest of its country, each party desired to pursue the operations; but the measurements must be carried along two different meridians. In a formal interview subsequently arranged between the

chiefs, it was decided by lot that the Russians should continue the meridian already begun, while the English should choose an arc 60 or 80 miles to the west, and unite it to the first by a series of auxiliary triangles; they would then continue their survey as far as latitude 20°.

All these arrangements were made without any outbreak; personal rivalry was swallowed up by national feeling, and the Colonel and Strux did not exchange an uncivil word, but kept within the strictest limits of politeness.

The caravan was equally divided, each party preserving its own stores. The steamboat fell by lot to the Russians.

Mokoum, especially attached to Sir John, followed the English caravan. The pioneer, equally experienced, headed the Russians. Each party retained its instruments and one of the rigisters.

On the 31st of August the Commission divided. The English cordially thanked the missionaries for their kind hospitality, and started first to connect their last station with their new meridian.

If, before their departure, anyone had entered the privacy of the inner room, he would have seen Emery grasping the hand of Zorn, once his friend, but now, by the will of their Majesties the Queen of England and the Czar of Russia, no longer friend, but foe.

CHAPTER XV

A Rhinoceros Hunt

AFTER the separation the English astronomers continued their labors with the same care and precision as hitherto. Three had now to do the work of six, and consequently the survey advanced more slowly, and was attended with more fatigue; but they were not the men to spare themselves; the desire that the Russians should not surpass them in any way sustained them in their task, to which they gave all their time and thoughts. Emery had to indulge in fewer reveries, and Sir John could not so often spare his time for hunting. A new programme was drawn up, assigning to each astronomer his proper share of the labor. Sir John and the Colonel undertook all observations, both in the sky and in the field; while Emery replaced Palander as calculator. All questions were decided in common, and there was no longer any fear that disagreement should arise. Mokoum was still the guide and hunter to the caravan. The English sailors, who formed half the crew of the *Queen and Czar,* had of course, followed their countrymen; and although the Russians were in possession of the steam-vessel, the India-rubber boat, which was large enough for ordinary purposes, was the property of the English. The provision-wagons were divided, thus impartially ensuring the revictualing of each caravan. The natives likewise had to be severed into two equal troops, not without some natural signs of displeasure on their part; far from their own pasturages and water-courses, in a region inhabited by wandering tribes hostile to the tribes of the south, they could scarcely be reconciled to the prospect of separation. But at length, by the help of the bushman and the pioneer, who told them that the two detachments would be comparatively a short distance apart, they consented to the arrangement.

On leaving Kolobeng the English caravan re-entered the burnt forest and arrived at the cromlech which had served for their last station. Operations were resumed, and a large triangle carried the observers at once ten or twelve miles to the west of the old meridian.

Six days later the auxiliary series of triangles was finished, and Colonel Everest and his colleagues, after consulting the maps, chose the new arc one

degree west of the other, being 23° east of the meridian of Greenwich. They were not more than sixty miles from the Russians, but this distance put any collision between the two parties out of the question, so it was improbable that their triangles would cross.

All through September the weather was fine and clear. The country was fertile and varied, but scantily populated. The forests, which were few, were broken by wide, open tracts, and with occasional mounds occuring in the prairies, made the district extremely favorable for the observations. The region was well provided with natural products. The sweet scent of many of the flowers attracted swarms of scarabæi, and more especially a kind of bee as nearly as possible like the European, depositing in clefts of rocks and holes of trees a white liquid honey with a delicious flavor. Occasionally at night large animals ventured near the camp; there were giraffes, varieties of antelopes, hyenas, rhinoceroses, and elephants. But Sir John would not be distracted, he resolutely discarded his rifle for his telescope.

Under these circumstances, Mokoum and some of the natives became purveyors to the caravan, and Sir John had some difficulty in restraining his excitement when he heard the report of their guns. The bushman shot three prairie-buffaloes, the bokolokolos of the Bechuanas, formidable animals, with glossy black skins, short strong legs, fierce eyes, and small heads crowned with thick black horns. They were a welcome addition to the fresh venison which formed the ordinary fare.

THE natives prepared the buffalo-meat as the Indians of the north do their pemmican. The Europeans watched their proceedings with interest, though at first with some repugnance. The flesh, after being cut into thin slices and dried in the sun, was wrapped in a tanned skin, and beaten with flails till it was reduced to a powder. It was then pressed tightly into leathern sacks and moistened with boiling tallowy suet collected from the animal itself. To this they added some marrow and berries, whose saccharine matter modified the nitrogenous elements of the meat. This compound, after being mixed and beaten, formed, when cold, a cake as hard as a stone. Mokoum, who considered his pemmican a national delicay, begged the astronomers to taste the preparation. At first, they found it extremely unpalatable, but, becoming accustomed to the flavor, they soon learnt to partake of it with great relish. Highly nourishing, and not at all likely to be tainted, containing, moreover, its nutritive elements closely compacted, this pemmican was exactly suited to meet the wants of a caravan traveling in an unknown country. The bushman soon had several hundred pounds in reserve, and they were thus secure from any immediate want.

Days and nights passed away in observations. Emery was always thinking of his friend, and deploring the fate which had so suddenly severed the bond of their friendship. He had no one to sympathize with his admiration of the wild characteristics of the scenery, and, with something of Palander's enthusiasm, found refuge in his calculations. Colonel Everest was cold and calm as ever, exhibiting no interest in anything beyond his professional pursuits. As for Sir John, he suppressed his murmurs, but sighed over the loss of his freedom. Fortune, however, sometimes made amends; for although he had no leisure for hunting, the wild beasts occasionally took the initative, and came near interrupting his observations. He then considered defense legitimate, and rejoiced to be able to make the duties of the

astronomer compatible with those of the hunter.

One day he had a serious encounter with an old rhinoceros, which cost him "rather dear." For some time the animal had been prowling about the flanks of the caravan. By the blackness of his skin Mokoum had recognized the "chucuroo" (such is the native for this animal) as a dangerous beast, and one which, more agile than the white species, often attacks man and beast without any provocation.

On this day Sir John and Mokoum had set off to reconnoiter a hill six miles away, on which the Colonel wished to establish an indicating post. With a certain foreboding, Sir John had brought his rifle with conical shot instead of his ordinary gun; for although the rhinoceros had not been seen for two days, yet he did not consider it advisable to traverse unarmed an unknown country. Mokoum and his companions had already unsuccessfully chased the beast, which probably now had abandoned its designs. There was no reason to regret the precaution. The adventurers had reached the summit of the hill, when at the base, close to a thicket, of no large extent, appeared the chucuroo. He was a formidable animal; his small eyes sparkled, and his horns planted firmly one behind the other on his bony nose, furnished a most powerful weapon of attack.

THE bushman caught sight of him first, as he crouched about half a mile distant in a grove of lentisk.

"Sir John," he cried, "fortune favors you; here is your chucuroo!"

"The rhinoceros!" exclaimed Sir John, with kindling eyes, for he had never before been so near the animal.

"Yes; a magnificent beast, and he seems inclined to cut off our retreat," said the bushman. "Why he should attack us I can hardly say; his tribe is not carnivorous; but anyway, there he is, and we must hunt him out."

"Is it possible for him to get up here to us?" asked Sir John.

"No; his legs are too short and thick, but he will wait."

"Well, let him wait," said Sir John; "and when we have examined this station, we will try and get him out."

Then they proceeded with their reconnoitering, and chose a spot on which to erect the indicating-post. They also noticed other eminences to the northwest which would be of use in constructing a subsequent triangle.

Their work ended, Sir John turned to the bushman saying, "When you like, Mokoum."

"I am at your orders, Sir John; the rhinoceros is still waiting."

"Well, let us go down, a ball from my rifle will soon settle matters."

"A ball!" cried Mokoum; "you don't know a rhinoceros. He won't fall with one ball, however well it may be aimed."

"Nonsense!" began Sir John, "that is because people don't use conical shot."

"Conical or round," rejoined the bushman, "the first will not bring down such an animal as that."

"Well," said Sir John, carried away by his self-confidence, "as you have your doubts, I will show you what our European weapons can do."

And he loaded his rifle, to be ready to take aim as soon as he should be at a convenient distance.

"One moment, Sir John," said the bushman, rather piqued, "will you bet with me?"

"Certainly," said Sir John.

"I am only a poor man," continued Mokoum, "but I will willingly bet you half-a-crown against your first ball."

"Done!" replied Sir John instantly. "Half-a-crown to you if the rhinoceros doesn't fall to my first shot."

The hunters descended the steep slope,

and were soon posted within range of the rhinoceros. The beast was perfectly motionless, and on that account presented an easy aim.

Sir John thought his chance so good, that at the last moment he turned to Mokoum and said:

"Do you keep to your bargain?"

"Yes," replied the bushman.

The rhinoceros still being as motionless as a target, Sir John could aim wherever he thought the blow would be mortal. He chose the muzzle, and, his pride being roused, he aimed with the utmost care, and fired. The ball failed in reaching the flesh; it had merely shattered to fragments the extremity of one of the horns. The animal did not appear to experience the slightest shock.

"That counts nothing," said the bushman, "you didn't touch the flesh."

"Yes, it counts," replied Sir John, rather vexed; "I have lost my wager. But come now, double or quits?"

"As you please, Sir John, but you will lose."

"We shall see."

The rifle was carefully reloaded, and Sir John, taking rather a random aim, fired a second time; but meeting the horny skin of the haunch, the ball, notwithstanding its force, fell to the ground. The rhinoceros moved a few steps.

"A crown to me," said Mokoum.

"Will you stake it again?" asked Sir John, "double or quits."

"By all means," said Mokoum.

This time Sir John, who had begun to get angry, regained his composure, and aimed at the animal's forehead. The ball rebounded, as if it had struck a metal plate.

"Half-a-sovereign," said the bushman calmly.

"Yes, and another," cried Sir John, exasperated.

The shot penetrated the skin, and the rhinoceros made a tremendous bound; but instead of falling, he rushed furiously upon the bushes, which he tore and crushed violently.

"I think he still moves," said the bushman quietly.

Sir John was beside himself; his composure again deserted him, and he risked the sovereign he owed the bushman on a fifth ball. He continued to lose again and again, but persisted in doubling the stake at every shot. At length the animal, pierced to the heart, fell.

Sir John uttered a loud hurrah; he had killed his rhinoceros. He had forgotten his disappointment, but he did not forget his bets. It was startling to find that the perpetually redoubled stakes had mounted at the ninth shot to £32. Sir John congratulated himself on his escape from such a debt of honor; but in his enthusiasm he presented Mokoum with several gold pieces which the bushman received with his usual equanimity.

CHAPTER XVI

A Strange Antelope

BY the end of September the astronomers had accomplished half their task. Their diminished numbers added to their fatigue, so that, notwithstanding their zeal, they occasionally had to recruit themselves by resting for several days. The heat was overpowering. October in lat. 24° S. corresponds to April in the northern hemisphere and for some hours after midday work was impossible. The bushman was alone uneasy at the delay, for he was aware that the arc was about to pass through a singular region called a "karroo," similar to that at the foot of the Roggeveld mountains in Cape Colony. In the damp season this district presents signs of the greatest fertility; after a few days of rain the soil is covered with a dense verdure; in a very

short time flowers and plants spring up everywhere; pasturage increases, and water-courses are formed; troops of antelopes descend from the heights and take possession of these unexpected prairies. But this strange effort of nature is of short duration. In a month, or six weeks at most, all the moisture is absorbed by the sun; the soil becomes hardened, and chokes the fresh germs; vegetation disappears in a few days; the animals fly the region; and where for awhile there was a rich fertility, the desert again asserts its dominion.

This karroo had to be crossed before reaching the permanent desert bordering on Lake Ngami. The bushman was naturally eager to traverse this region before the extreme aridity should have exhausted the springs. He explained his reasons to the Colonel, who perfectly understood, and promised to hurry on the work, without suffering its precision to be affected. Since, on account of the state of the atmosphere, measuring was not always practicable, the operations were not infrequently retarded, and the bushman became seriously concerned lest when they reached the karroo its character of fertility should have disappeared.

Meanwhile the astronomers could not fail to appreciate the magnificence around. Never had they been in finer country. In spite of the high temperature, the stream kept up a constant freshness, and thousands of flocks would have found inexhaustible pasturage. Clumps of luxuriant trees rose here and there, giving the prospect at times the appearance of an English park.

Colonel Everest was comparatively indifferent to these beauties, but the others were fully alive to the romantic aspect of this temporary relief to the African deserts. Emery now especially regretted the alienation of his friend Zorn, and often thought both would have delighted in the charming scenery around them.

The advance of the caravan was enlivened by the movements as well as by the song-notes of a variety of birds. Some of these birds were edible, and the hunters shot some brace of "korans," a sort of bustard peculiar to the South African plains, and some "dikkops," whose flesh is very delicate eating. They were frequently followed by voracious crows, instinctively seeking to avert attention from their eggs in their nests of sand. In addition to these, blue cranes with white throats, red flamingoes, like flames in the thinly scattered brushwood, herons, curlews, snipes, "kalas," often perching on a buffalo's neck, plovers, ibises, which might have flown from some hieroglyphic obelisk, hundreds of enormous pelicans flying in file—all were observed to find congenial habitats in this district, where man alone is the stranger. But of all the varieties of the feathered race, the most noticeable was the ingenious weaver-bird, whose green nests, woven with rushes and blades of grass, hung like immense pears from the branches of the willows. Emery, taking them for a new species of fruit, gathered one or two, and was much surprised to hear them twitter like sparrows. They seemed some excuse for the ancient travelers in Africa, who reported that certain trees in the country bore fruit producing living birds.

The karroo was reached while still it was lovely in its verdure. Gnus, with their pointed hoofs, caamas, elands, and gazelles abounded. Sir John could not resist the temptation to obtain two days' leave from the Colonel, which he devoted with all his energy to his favorite pastime. Under the guidance of the bushman, while Emery accompanied as an amateur, he obtained many a success to inscribe in his journal, and many a trophy to carry back to his Highland home. His hand, skillful with the delicate instruments of the survey, was at

home still more on his gun; and his eye, keen to discern the remotest of stars, was quick to detect the merest movement of a gazelle. It was ever with something of self-denial that he laid aside the character of the hunter to resume the duties of the astronomer. The bushman's uneasiness was ere long renewed. On the second day of Sir John's interval of recreation, Mokoum had espied, nearly two miles to the right, a herd of about twenty of the species of antelope known as the oryx. He told Sir John at once, and advised him to take advantage of the fortune that awaited him, adding that the oryx was extremely difficult to capture, and could outstrip the fleetest horse, and that Cumming himself had not brought down more than four.

THIS was more than enough to arouse the Englishman. He chose his best gun, his best horse, and his best dog, and in his impatience preceding the bushman, he turned toward the copse bordering the plain where the antelopes had been seen. In an hour they reined in their horses, and Mokoum, concealed by a grove of sycamores, pointed out to his companion the herd grazing several hundred yards to leeward. He remarked that one oryx kept apart.

"He is a sentinel," he said, "and doubtless cunning enough. At the slightest danger he will give his signal, and the whole troop will make their escape. We must fire from a long distance, and hit at the first shot."

Sir John nodded in reply, and sought for a favorable position.

The oryxes continued quietly grazing. The sentinel, as though the breeze had brought suspicions of danger, often raised his head, and looked warily around. But he was too far away for the hunters to fire at him with success, and to chase the herd over the plain was out of the question. The only hope of a lucky issue was that the herd might approach the copse.

Fortune seemed propitious. Gradually following the lead of the sentinel male, the herd drew near the wood, their instinct, perchance, making them aware that it was safer than the plain. When their direction was seen, the bushman asked his companion to dismount. The horses were tied to a sycamore, and their heads covered to secure them from taking alarm.

Followed by the dogs, the hunters glided through the creepers and brushwood till they were within three hundred paces of the troop. Then, crouching in ambush, and waiting with loaded guns, they could admire the beauty of the animals. By a strange freak of nature, the females were armed with horns more formidable than those of the males. The whole herd approached the wood, and awhile remained stationary. The sentinel oryx, as it seemed, was urging them to leave the plain; he appeared to be driving them, somewhat as a sheep-collie collects a flock, into a compact mass. The herd seemed strangely indifferent, and indisposed to submit to the guidance of their leader. The bushman was perplexed; he could not understand the relative movements of the sentinel and the herd.

Sir John began to get impatient. He fidgeted with his rifle, sometimes wanting to fire, sometimes to advance; and the bushman had some trouble to restrain him. An hour passed away in this manner, when suddenly one of the dogs gave a loud bark, and rushed toward the plain. The bushman felt angry enough to send a ball into the excited brute. The oryxes fled and Sir John saw at once that pursuit was useless; in a few seconds they were no more than black specks in the grass. But to the bushman's astonishment it was not the old male which had given the signal for

flight. The oryx remained in its place, without attempting to follow, and only tried to hide in the grass.

"Strange," said the bushman; "what ails the creature? is he hurt, or crippled with age?"

"We shall soon see," said Sir John, advancing toward the animal.

The oryx crouched more and more in the grass; only the tips of his long horns were visible above the surface; but as he did not try to escape, Sir John could easily get near him. When within a hundred paces he took aim and fired. The ball had struck the head, for the horns sunk into the grass. The hunters ran hastily to the spot. The bushman held in his hand his hunting-knife, in case the animal should still live. This precaution was unnecessary; the oryx was so dead, that when Sir John took hold of the horns, he pulled nothing but an empty flabby skin, containing not so much as a bone.

"By St. Andrew! these things happen to no one but me," he cried, in a tone so comical that anyone but the immovable Mokoum would have laughed outright. But Mokoum did not even smile. His compressed lips and contracted brow showed him to be utterly bewildered. With his arms crossed, he looked quickly right and left.

Suddenly he caught sight of a little red leather bag, oramented with arabesques on the ground, which he picked up and examined carefully.

"What's that?" asked Sir John.

"A Makalolo's pouch," replied Mokoum.

"How did it get there?"

"The owner let it fall as he fled."

"What do you mean?"

"I mean," said Mokoum, clenching his fists tightly, "that the Makololo was in the oryx skin, and you missed him."

Sir John had not time to express his astonishment, when Mokoum, observing a movement in the distance, with all speed seized his gun and fired.

He and Sir John hastened to the suspected spot. But the place was empty; they could perceive by the trampled grass that someone had just been there; but the Makalolo was gone, and it was useless to think of pursuit across the prairie.

The two hunters returned, much discomposed. The presence of a Makololo at the cromlech, together with his disguise, not unfrequently adopted by oryx hunters, showed that he had systematically followed the caravan. It was not without design that he was keeping watch upon the Europeans and their escort. The more they advanced to the north, the greater danger there would be of being attacked by the plunderers.

Emery was inclined to banter Sir John on his return from his holiday without booty; but Sir John replied:

"I hadn't a chance, William; the first oryx I hunted was dead before I shot at him."

End of Part II

DISCUSSIONS

In this department we shall discuss every month topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

A Canadian Letter. Complimentary As Is Usual with Readers in Canada and England

Editor, AMAZING STORIES:

Is it possible! The February issue is even better than the January. I notice you have a star in the second "A" of AMAZING on the cover. It certainly is a star special. It is the best issue of AMAZING STORIES yet!

I like your idea of two serials per issue. I hope you keep it up.

P. Schuyler Miller's letter was very interesting as are all his letters. Let's have more stories from his pen.

When are you going to have another story by Jack Williamson?

I think that J. H. Hennigar's idea of a subtitle relating what kind of story it is to be is to be favored.

Now, to discuss the stories in the February issue. It is hard to make a selection, as they were all good, except Edgar Allan Poe's reprint. Not that it is poor, but that I didn't like it. I think the best story in the issue was "The Regenerative Wonder," by Winthrop W. Hawkins. It is his first story I notice. Let's have more of him. "The Time Jumpers" by Philip Nowlan was very good. Here's hoping that he writes more. Dr. Smith's "Triplanetary" is very good; much better than "Spacehounds of the I.P.C." "Terror Out of Space" is also good, also "The Death Protozoan."

Ask J. W. Campbell to write some more about Arcot, Morey & Company.

Only once to my knowledge was there a machine for producing ozone in a space ship. It appeared in Campbell's "Solarite." It is a well-known fact that the ultra-violet rays from the sun would burn us to a cinder if it wasn't for a certain amount of ozone in the atmosphere. If we had too much ozone in the atmosphere it would blanket all the ultra-violet light and plant and animal life would cease to live. Well, then, what would happen in a space ship without ozone? They would burn right up. As to the argument about slang appearing in Dr. Smith's stories, he is to blame as well as many other authors. It is these writers (in my own opinion) that originate slang in the first place. Well, I hope I haven't wasted too much of your valuable time. Your mag. is certainly worth the quarter you charge for it.

Jack De Pangher,
Sardis, B. C.
Canada.

(We always get the kindest letters from foreign readers. We were somewhat afraid of giving two serials in an issue, but this writer confirms the propriety of it and wants us to keep it up. The sub-title idea has an element of danger in it and it may spoil the story by divulging its nature. One of the objections that have been made to cross-headings is that they tell the story in advance. We feel that the foreword of a story can convey to the reader some idea of its nature without revealing the plot, and this certainly is better than a mere sub-title. One thing to be remembered is that the magazine is of limited size. If circumstances permitted, we could publish a weekly edition, so many authors are sending us really good stories, and when you miss an author, you must consider that his absence is compensated for by the presence of others. Your letter is certainly a comfort.—EDITOR.)

A Devotee of Cricket Classifies Our Authors

Editor, AMAZING STORIES:

In writing this letter, we are attempting to accomplish a difficult task. Many readers have hinted at it, but as far as we can see, no one has actually set to work and labored over it.

In short, we will endeavor to classify, in the form of an All American Eleven, the best Sciencefiction authors.

The following are the eleven best authors which constitute the first team:

The line is:

Harl Vincent, right end; John Taine, right tackle; Edmond Hamilton, right guard; Nathan Schachner, center; Stanton A. Coblentz, left guard; Hyatt Verrill, left tackle; Jack Williamson, left end.

The backfield is:

Dr. David H. Keller, quarterback; Edward Elmer Smith, Ph. D., left halfback; John W. Campbell, Jr., right halfback; Abraham Merritt, fullback.

For the second team we have chosen:

Neil R. Jones, right end; Fletcher Pratt, right tackle; Ed Earl Repp, right guard; Jules Verne, center; Lawrence Manning, left guard; Francis Flagg, left tackle; Ray Cummings, left end.

The backfield is:

Capt. S. P. Meek, U. S. A., quarterback; Miles J. Breuer, left halfback; Bob Olsen, right halfback; Otfrid von Hanstein, fullback.

In our opinion Hugo Gernsback should be the trainer and T. O'Conor Sloane the coach.

Many a reader will inevitably complain saying, "Why did those 'so and sos' leave out my

favorite author? Why wasn't he in the first team? etc." Well, in that case, the most logical thing to do is to write an All American Eleven yourself, if you beg to differ with us. In picking the members of these mythical teams, we have tried to remain impartial, and to reason out the dead facts, so we beg of you readers, to go easy on us audacious lads, if we have made a mistake.

All the works of the picked authors did not appear in AMAZING STORIES, so we spent plenty of time going over the other S. F. magazines. We are curious to see what the other readers think of our choices, so we hope this letter will be printed.

Milton S. Rothman,
2500 N. 5th St.,
Philadelphia, Pa.
Raymond Peel Mariella,
58733 Woodcrest Ave.,
Philadelphia, Pa.

(While it is true that Philadelphia gave an astonishingly brilliant reception to the manager of the Athletic Baseball Club, we understand that for a number of years, Philadelphia has been quite devoted to cricket and that we presume is the reason that this letter deals in "elevens" instead of in "nines." It is certainly a novel idea and makes quite a picturesque presentation and while novelty is not always interesting we think that this novelty is decidedly so, and take great pleasure in publishing this letter. Perhaps some baseball affiliates will put our authors in the outer field or in the inside diamond with a selection of pitchers and catchers.—EDITOR.)

A Plea for a Weekly AMAZING STORIES, Written by a Time Traveller

Editor, AMAZING STORIES:

A peculiar longing came over me to see familiar covers and magazines, so out came the large box, in which the priceless treasures are kept. Enough to ransom a king! Yes you guessed it, the whole batch of AMAZING STORIES complete from 1927 up and with only a few numbers missing from 1926. To my chagrin. I dern near broke my back carrying them up, too, but it was certainly worth it.

Immediately, I was completely absorbed in the scrutinization of the epic literature (?). So oblivious of things about me, that time ceased to have any effect on me! Realizing this, I *willed* myself into the future, by deep concentration.

I found myself in really a familiar world, the stories had it all pictured out. Noticing a curious passer I inquired about the date. He replied, "604 A. A. S. B. A. W." Was I flabbergasted? Then instantly I realized what it meant, "After AMAZING STORIES Became A Weekly."

I was covered with smiles as I hurried to the library and asked for every copy of A. S. since the last one I had read in my own time. O boy, did they break their backs carrying them in. That just goes to show what a fellow will do, just to let another reader get some issues of A. S. Soon there were a few hundred piles of them stacked high all around me. Before I began reading I discovered something exceedingly interesting. What do you think is in the place of the constitution? Nothing but the first issue of A. S. Yes Sir. Everyone is a loyal supporter now.

Then I commenced a ready task, and it was exactly a year later when every one was read, but then I found 52 more waiting. They went the way of the rest. Never did I see so many sequels, the readers sure must have mobbed the authors. Was I in my element?

All that time I had not slept a wink or eaten a bite of food. How you ask? Well, in reading the magazines, I actually absorbed the energy from the stories. That did away with eating and sleeping. Some power? No, some story.

Next I went to the airport and took in a pleasant trip around the Solar system. Believe it or not, ours is the most backward planet. Every one but ours had Science-fiction magazines published for thousands of years! Then I went to the huge public laboratories, where, after depositing the cash, (one thing you can't get away from wherever you go) I was whisked to the 94th, and the 95th dimensions. Rather interesting, though not quite like reading AMAZING STORIES.

Seeing that all had been verified, I *willed* myself back to my right time, right back to the second of my departure. Quickly rushing to some avid science-fiction enthusiasts, I related all that had happened. I told about the A. S. weekly, though I never mentioned a single word about the contents. (That would be mutiny.)

They all stared back at me, some skeptical, and some with a faint hope of belief. One of them, Charles by name, told me then and there, that it was a whale of a whopper, some narrative. I looked him straight in the eye and said, "Vas you dere Sharlie?" He was thoroughly cowed, my argument was won, because no one could prove that what I said was not the truth. (I couldn't prove it was the truth either.)

So all we can do is wait and see if I was right. As soon as an AMAZING STORIES Weekly comes out, I'll be victorious. Don't keep me waiting, Mr. Ed.

Raymond Peel Mariella,
58733 Woodcrest Avenue,
Philadelphia, Pa.

(This letter we recommend strongly to our readers. We do not often get a real time story into Discussions, but here is one which might be given within the sacrosanct pages that make up the author's department of the magazine. It is a sort of prediction of the future when a

time traveler found out that eventually there was to be a Weekly AMAZING STORIES. One pleasant feature about such letters as this is that they seem to come from one of the family. The appreciative readers of AMAZING STORIES, and there are a great many of them, always seem to belong to us. Our relations with our readers are the source of true pleasure.—EDITOR.)

Criticism Leading Up to a Sentence of Appreciation

Editor, AMAZING STORIES:

I am writing in to protest on the publication of the Edgar Allan Poe reprint story "A Descent Into the Maelstrom." It is undoubtedly a very fine story, but in offering it, the Editor contradicts his own statements. Hasn't he many times said that reprints would not be given because of their more or less general procurability? He has, and I have always disagreed on that, with a few exceptions. Most of the old classics have not been easy to get, and are many times in poor condition if obtained. The few exceptions however are the stories by Poe and Wells. These authors' books are just about in every library in the country, and are easily procurable. It stands to reason that anyone desiring to peruse the works of Poe would borrow or buy a complete volume and not read a story a month *via* A. S. In other words, giving a Poe story gyps us out of an "original" story, or a worthwhile reprint.

Besides it is inconceivable that the Editor has misconstrued what the readers ask for. I do not recollect reading any letters asking for Poe, and very few for Verne. In the past, Verne reprints didn't "take" with the readers. What we readers want are stories like the following (not necessarily these): "The Metal Monster," "People of the Pit," "Palos of Roy Star Pack," "The Mouthpiece of Zitu," "Catalepsy," "The Nth Man," "Queen of Life," "Almost Immortal," "The Blind Spot," "On the Brink of 2000," "Messiah of the Cylinder," "The Air Trust," "Columbus of Space," "Conquest of Mars," "Vanishing Men" and many others.

Let's have a showdown on the entire reprint question once and for all. Will you reprint stories we want, or won't you? Or will you give us entire reprint Quarterlies, or won't you? If you can't decide what reprints to present, print a list and ask the readers to list their three top preferences. Then go ahead and give us, one after another, the winning stories.

The February issue, on the whole is excellent, and following the all-star January number as it does, 1934 looks like a banner year for s. f. fans. "Terror Out of Space," with even its mediocre title, indicates the biggest smash hit since Keller's "Metal Doom."

Louis Robert Adessa,
18710 Wyoming Avenue,
Hollis, New York.

(A curious question is asked in this letter. It reads: "Will you reprint stories we want, or won't you?" (etc.) There are considerations affecting the matter going into the magazine enough to distract any ordinary individual. We are glad to see that you do approve of some things in our pages. Your suggestion about a readers' vote on reprints would be excellent if the readers would vote.—EDITOR.)

A Letter of True Appreciation of Our Authors' Works

Editor, AMAZING STORIES:

"Terror Out of Space" was wonderful, at least for the first part—and now for the second. I heartily agree with Harry Bates that "Triplanetary" is the best space story—however, I will not say "ever written," but instead, "since 'Invaders'." "The Time Jumpers" was a charming narrative. Glad to see Philip Nowlan back again. Let's have more from him.

I am waiting patiently for "Through the Andes" and "Liners of Time." Here's hoping for an early publication.

I am heartily in favor of the reprint each month, but now that we've had Verne and Poe, let's have some of the earlier AMAZING STORIES, such as: "The Man Higher Up," or "The Mad Planet," etc.

About time for a new spring QUARTERLY, isn't it? Suggesting "A Columbus of Space," "The Runaway Skyscraper" and "The Green Splotches." What a reprint QUARTERLY that would make!

So—till the March issue arrives, and I have the pleasure of handing the required 50c piece to the bookstall clerk for a new QUARTERLY—

Lewis F. Torrance,
802 College Avenue,
Winfield, Kansas.

(A number of readers have objected to reprints. There is no reason why AMAZING STORIES should be shut off from this sort of excellent literature, and this letter from the western country really asks for them. Dr. Smith, it seems to us, should be a very happy man for AMAZING STORIES has certainly brought him a full meed of praise.—EDITOR.)

Some Compliments and Suggestions from a Friendly Reader

Editor, AMAZING STORIES:

AMAZING STORIES has completed its eighth year. Congratulations!

In the March issue I place the stories as follows: 1. "Triplanetary." 2. "Peril Among the Drivers." 3. "Terror Out of Space." 4. Ms. Found in a Bottle." 5. "The Man Who Stopped the Earth." 6. "A Job of Blending."

Morey's illustrations have improved over previous issues. I would still like to see Paul, Wesso, Winter and Marchioni help to do the art work.

Concerning the Jules Verne picture: I suggest that you have it reproduced in colors on

good paper and in large size (10 in. × 10 in.), and sell it to the readers at a reasonable price.

I enjoy reading Discussions and your Editorials, but while AMAZING STORIES is in the reduced size, I think you should give us as much fiction as possible. Print the Editorial in small print on one page and limit Discussions to five full pages.

AMAZING STORIES is poorly printed. Can't you use an easier reading type?

Jack Darrow,
4224 N. Sawyer Avenue,
Chicago, Ill.

(We are giving Discussions about double the space that you suggest. They are a most characteristic part of the magazine, and we are very anxious to maintain this status which they have acquired. The Editorials also have long been a feature of the magazine, starting with the first issue, and they have recently been given more space and readers have expressed their appreciation of them, so we feel that we are doing the right thing in making them longer than formerly.—EDITOR.)

A Chinese Edition of AMAZING STORIES is Suggested. What Does it Mean?

Editor, AMAZING STORIES:

Don't let anybody kid you about the new AMAZING STORIES. Its size is all right and its story content equally so. It is head and shoulders over the old large size magazine of a year or so ago. The stories then were terrible and generally of a much lower standard than they are today. For example, some of the outstanding sore thumbs I refer to are "Children of the Great Magma," "Intelligence Gigantic," "Ancients of Easter Island," "Universal Merry-go-Round" (the worst astronomy I've ever seen), "Beyond the End of Space" (better of course than a lot, but for Campbell—probably his worst), "Tomb of Time," "In the Scarlet Star," "Treasure of the Golden God," "World of the Living Dead." There were occasionally good ones, but not often. Two I can think of:—"Tumithak" and "Cavern of Thunders."

Now look at the new magazine since October. Of the new stories not a single one was poor enough to be ranked anywhere near that list I gave. All were good. The most outstanding being perhaps "Men Without Shadows," "Battery of Hate," "Gold," "Lost Language," "Time Jumpers," not to mention "Triplanetary" and "Terror Out of Space."

But there is one fault. The reprints. Not that they're reprints. But what a poor selection for printing. Outside of "The Watch's Soul," which was poor, *all* could be had anytime from any library that is even of smallest size. Poe can be had all over the world. There is not the slightest reason in the world why you should reprint him. "The Diamond Lens," can also be had in many places. There are plenty of good science-fiction stories from long ago to be had that are *not* to be found everywhere. Surely you can dig up a few of those. I will not advocate your reprinting some of the classics found in the old Munsey magazines, such as "Darkness and Dawn," etc., because I heard that the copyright owners won't permit their publication in magazines. I think you must know that too. Why don't you say so to a few of your reprint hounds, and save yourself a lot of pestering? Perhaps you could acquire the rights to some of the old Science Fiction books now out of print. You could publish those in the Quarterly.

Yours till you bring out a Chinese edition,

Donald A. Wollheim,
801 West End Avenue
New York City,

(This letter speaks for itself, which is an expression we have used many times before about letters, except for the final sentence where a Chinese Edition is referred to. We fear that it will be a long while before any such thing is perpetrated by us.—EDITOR.)

An Interesting Communication About the Science Fiction Association—A Country-wide Response to the Letter in Our February Issue

Editor, AMAZING STORIES:

Many thanks for having printed the letter describing the Science Fiction Association's ambitious program in the February issue of AMAZING STORIES. The great number of membership applications that poured in on us speaks volumes for the quality and strength of your circulation in every part of the country, for which you are to be congratulated—or perhaps your readers are to be congratulated on reading so fine a magazine.

Thanks to the influx of new members due to the letter in AMAZING STORIES, we are now in a position to carry out at least a part of our ambitious program. The first part calls for the publication in a single volume of what our members consider the "Best Science Fiction Short Stories of the Past". Members are daily casting their votes—since the entire membership, and not any committee or subcommittee is deciding which stories are worthy of inclusion in the volume, and every member can cast as many votes as he pleases, if he thinks it is worth while to write out a review of the story, stating the name of its author and periodical and date on which it was published—and the volume will probably be going to press in a few months. It will probably take a good deal of time to arrange with the owners of the copyrights and the authors for the publication, but if things go forward as we expect them to, early 1935 will greet the first publication of the Science Fiction Association.

Although there will be great expense involved in the printing and binding of the volume, a copy will be sent to every member who has paid the small annual fee required. Many of the readers and authors of AMAZING STORIES will

doubtlessly be interested in securing a copy of the book, so I advise them to send their names and addresses along with the twenty-five-cent annual membership fee to Al Ostrow, Secretary, the Science Fiction Association, 12 E. Clarke Place, Bronx, New York, at once. Membership will automatically place them on the editorial board of the "Best Science Fiction Short Stories of the Past," and will entitle them to many other worth-while privileges, while at the same time belonging to a nation-wide association devoted to the best interests of science fiction and to making science fiction scientific fact.

Alexander Ostrow,
12 E. Clarke Place,
Bronx, New York.

(This interesting letter requires no answer except to say that the writer and his associates have our best wishes for success in their difficult undertaking. There has been quite a fad for publishing books of the alleged "best stories," and it would seem that there is room for "the best science fiction stories" to be thus given to the public in book form.—EDITOR.)

Humor in Science Fiction Stories—Back Numbers to Dispose Of

Editor, AMAZING STORIES:

For some time I have been intending to write to you, to commend you for your good work. I have been reading your magazine since its birth and have not missed a single copy. I am so well satisfied with it, that I have only one little complaint to make. How about some humor in science stories that make you laugh? I wonder how many readers liked the "Scientific Adventures of Mr. Fosdick" and "Hicks Inventions with a Kick." I wonder what happened to those authors. How about some more of these stories? Stories by Dr. Keller and Dr. Breuer are really gems of science stories. "The Miracle of the Lily" I consider the best story ever published. In conclusion I would like to say that I will sell or trade all issues of A. S. from April, 1926, to December, 1933. All these have covers on them, and are in perfect condition and are bound along the end with extra paper tape. Also I have books by Ray Cummings, "The Man Who Mastered Time" and "Tarabi the Conqueror." The reason I want to trade them is they take up too much room. Anyone interested in this, please write to me.

Carl R. Maly,
4849 Patterson Avenue,
Chicago, Illinois.

(The humorous stories to which you refer were greatly enjoyed by the writer of this note. Sometimes, one feels that too much of a taste for humor is a misfortune, and we have felt that in our own case this may be too highly developed, but our correspondence indicated to us that these stories were not acceptable to our readers. We hope that the publication of this letter will bring you some answers.—EDITOR.)

The Editor Has No Distaste for Interplanetary, as He Never Tried It—How Did You Like It?—Morey Is at Last Winning Appreciation for His Work

Editor, AMAZING STORIES:

I, too, noticed your comment on Alan F. Wiggen's letter. I firmly agree with a few of A. J. Stinnett's opinions, but I do think it is your own business if you want to be a wet blanket and show your disbelief of interplanetary travel. I believe in inter-planetary travel in the not-so-distant future. Why not?

I see Morey has come into his own in a big way. The cover of the February, 1934, issue was a masterpiece. Morey combines the work of the famed Paul, the master, Wesso, and all the other petty artists into one grand slam of a cover that knocks your eye out. Anyone that has thought Morey poor up to this issue, should now acknowledge him as the best artist that Science-Fiction magazines ever could claim. That's some tribute to your genius, Morey, but it is a true one.

"Terror Out of Space," by H. Haverstock Hill, begins with a bang! It is going to run a close second with "Triplanetary."

I was all worked up over seeing Bob Olsen's name on the cover, and the crowded out notice was a great disappointment. He is one of your best authors, and I think he should write more stories.

"The Regenerative Wonder" was fairly good and it reminded me of a story which came out in 1929 called "One Leg Too Many."

Phil Nowlan fails to reach the heights he attained when he wrote "Armageddon" and "The Airlords of Han" many years ago. There was no excuse for "The Time Jumpers." When I read a time story I like to hear the author's theory concerning time explained; it makes the story more real and interesting.

"The Death Protozoan" by Clifton B. Kruse was excellent. It reminded me of "The Exterminator," "The White Army," and "Phagocytes."

I am glad to hear that the editor welcomes criticism. I know I would be a nervous wreck if I had to listen to criticism all the time. But, "since you can take it and like it," I will do my bit to make you happy.

Fred Anger,
3151 Eton Avenue,
Berkeley, Calif.

(It will take nearly a quarter of a million miles of travel through space to go to our satellite the moon. It would be something like going around the world at the Equator, or in any great circle, ten times. This would seem a pretty serious proposition, but when the distance to be traversed became an interplanetary one, ranging from forty millions of miles upwards, it makes us feel that the future you

refer to is a very distant one. As far as a wet blanket is concerned, the writer does not believe that his views will affect those of eager interplanetarians. You will find in one of our letters an expression of pleasure at the idea of Philip Nowlan coming back to us with a story. It is the old proverb come true, that you cannot please everybody. We will be glad to have any more criticisms which you have to offer. They are certainly a useful guide.—EDITOR.)

Criticisms of Stories—Broadcasting to the Stars and the Heaviside Layer

Editor, AMAZING STORIES:

The two futuristic stories now running in this magazine, "Triplanetary" by Edward E. Smith and "Terror Out of Space" by H. Haverstock Hill, are splendid, especially the former. I consider "Triplanetary" far superier to the "Skylark" stories by the same author. In fact, to me Dr. Smith is ahead of all of them in space traveling, although Harl Vincent and a few others run him pretty close at times. "Terror Out of Space" is a good yarn as well, and in some respects it is more human and less bizarre than "Triplanetary," but "Triplanetary" is hard to beat for excitement. I forgot my supper while reading the March installment. If I can do anything to persuade you not to republish "Skylark" or "Moon Pool" *et al.* stories, I will be glad; they answer no purpose. Let us progress and not take a retrogressive step. In regard to these stories, most of them advance far into the future and mankind will have to be a far brainier animal than he is to-day to carry out the future ways of mankind. We are still in a semi-barbarous condition. We have only to read the daily papers to know that, and yet, in our overrunning conceit and egotism, astronomers in their dogmatic way tell us we are the only intelligent beings in the universe. If we are, I don't think there is much to it. They tell us no life can possibly exist on any other planet of the solar system, and, with the exception of Mercury and Venus, all the others are dead, ice-covered worlds. This is not possible, for presuming all the planets of the solar system were separated from the sun by a passing star at the same time Jupiter and Saturn could not have cooled sufficiently and must be in a more or less molten condition today. I don't think the spectroscope is able to tell us very much about them, as their reflected light comes from the sun. In fact there is a strong possibility they possess life of some kind, presuming that they are in the condition the earth was in 800,000,000 years ago. In any case, it is a presumption on the part of these men to assume there is no other life of an intelligent order, when we think of the countless trillions of suns in the universe. If I am not intruding on your space and time, don't you think the chief reason we have never been able to communicate with another planet and they with us is due to the Heaviside layer, which will always prohibit radio waves passing through it? Also, is it not a fact there have been several ice ages in the remote past of the earth's history, and that these may have been caused by the solar system passing through more or less tenuous nebulous clouds of fine dust, or cosmic vapor of some kinds, thousands of light years across? If my letter appears somewhat involved, please pass it on, as I am writing just as thoughts pass through my mind.

R. L. Morris,
4 Hotel Clarendon,
Quebec, Canada.

(We like this letter. It expresses to a considerable extent our own ideas, and of course one always likes to have other people feel as they do, a very common weakness of humanity. When we see what the governing units are doing, when we hear of one of the best of them saying that war ennobles a nation, when we see them engaged in the equalization of their powers for slaughter, spending enormous sums of money on ships-of-war, an inspection of any one of which is depressing to the soul of man, or should be so, because it exhibits the highest phases of ingenuity and constructive mechanics devoted to destruction and death, we should be depressed and ashamed of ourselves.

The Heaviside layer has the property of reflecting long radio waves, those of ordinary length. To this power is attributed the fact that it is possible to send a radio message completely around the world by the aid of the Heaviside layer virtually holding the message close to the earth. Ordinary radio waves could not go through the heavyside layer—very short or micro waves could penetrate it.—EDITOR.)

One of Our Younger Readers Gives the History of His Devotion to AMAZING STORIES—He and His Father Are Competitors for the First Reading of It

Editor, AMAZING STORIES:

I have been reading your magazine for six years, since I was eleven years old. I can never forget the day I first saw it. Oddly enough, it was in a bundle of old magazines taken to a rag shop. It was a Quarterly, and contained "The Second Deluge." I cannot remember the author's name. New worlds were opened to me. I realize that I was then too young to fully understand the stories, but they appealed to something within me. At first my father forbid my reading it, but he picked up a magazine I had bought in defiance of his order and a new reader was born. He and I quarrel over who is to read it first.

Now about the magazine. The new size is

a great deal better than the old. It is easier to bind and to put into volumes, and it fits a book shelf very nicely. I realize that because some readers do not like Sigmond's covers, you have discontinued them. But, please, can't you have him alternate with Morey. To me, Sigmond's covers are better expression of the magazine than Morey's. They seem to get at the soul of the magazine. Why not let him try an occasional story illustration? Morey has greatly improved since he first appeared in your magazine, but he has his limitations. Cannot you also have Wesso try his hand?

The authors appearing in the magazine are the best in science fiction, but sometimes one writes a story that leaves a bad taste. Such a one was "The Doubt."

I have no favorite authors, but like the following best. (They are not in the order that I like them.) Edward E. Smith, Ph. D., John W. Campbell, Jr., Captain S. P. Meek, Jack Williamson, the two Doctors, Breuer and Keller, Stanton A. Coblentz, A. Merritt, John Taine; incidentally, Mr. Taine has not appeared for a long time. Why not a story from him? And a reprint of one of Merritt's works? J. L. Burtt also write some masterpieces, for his "Leumurian Documents" were such. Murray Leinster, Ray Cummings, Francis Flagg are a few more good authors—and P. Schuyler Miller is a very good writer—and to think that four years ago he was unknown! That proves that there are good authors unknown, waiting for a chance to write. Why not run a story contest. You may unearth others as good as Mr. Miller. I almost forgot. Neil R. Jones is another talented author. His stories of Professor Jameson are greatly enjoyed by my father and me. A new arrival, John Russell Fearn, was also admired by us.

The best stories that I can remember, follow. Naturally, some are left out, because I can't remember over the whole period of six years.

All the "Skylark" stories, "Space-hounds of I. P. C." ("Triplanetary" promises well), the "Arcot" stories by John W. Campbell, Jr., "The Stone From the Green Star" and "The Lady of Light" by Jack Williamson. The last deserves a sequel. Then the stories of "Awlo of Ulm" and "Troyana" by Captain S. P. Meek. "The Light from Infinity" by L. A. Eshbach was also a great story. "The Swordsman of Sarvon" by Charles Cloukey, "Out of the Void" by Leslie F. Stone, the detective stories by Bob Olson, also his fourth dimension narratives. "Omega, the Man" by L. H. Morrow was a poignant narration. Mr. Morrow should appear more frequently. "The Sages of Eros" by John Francis Kalland was another beautiful little story. "Radicalite" by Richard Rush Murray was a thought-provoking story. Might not the supposed ammonium metal have the same properties as sodium and potassium. We know that the NH_4 radical forms a base (as, do sodium and potassium). Might we not carry the similarity further? It would need to be kept under kerosene. Mr. Murray stated that it was a silvery metal that carries the similarity still further. But the point I want to make is this: Because of its activity I say that the NH_4 metal would not make a good catalyst in the preparation of sulphuric acid. I may be wrong (I frequently am), and I'd like to hear from other members, young and otherwise, regardless of sex.

I wish to thank you, Dr. Sloane, on the help AMAZING STORIES has been to me. I am greatly interested in the sciences and A. S. has greatly aided me. In Biology, Chemistry and Physics, that was the case. They made the subjects easy, for they provided a foundation to work upon. Your Editorials have been especially helpful. I know that you are extremely busy, but I just had to get this off my chest.

In conclusion, may I ask for correspondence from the younger members of this magazine?

Joseph J. Warga,
150 West Norris Street,
Philadelphia, Pa.

(As regards the art work in the magazine, we feel that Morey is in a sense being trained to what we want and this conclusion is borne out by our receiving letters stating that he is improving in his work. The names of authors as you give them simply represent our best. The use of ammonium in the role of catalyzer, while any chemist would consider it preposterous, we think is good enough for a fiction narration. It certainly would not do for sulphuric acid, assuming that you could produce it. We thank you for the last clause in your letter, which we take the liberty of accepting as good wishes.—EDITOR.)

The Question of Reprints—Old Issues to Dispose Of

Editor, AMAZING STORIES:

I have been a reader of AMAZING STORIES for many years, but of late I don't think that it is as good now as it was a few years ago. How about some stories like "Beyond the Void," "Out of the Green Prism," "The Green Girl," "Drums of Tapajos" and "Beyond the Green Prism."

And why must we have reprints of old stories by Poe and Verne when there is plenty of new material.

In various issues I noticed that some readers ask for old issues of your magazine I have copies of AMAZING STORIES from November, 1929, to date—all in good condition, which I will sell for the best offer, cash or trade.

I hope that you will refer some of your readers to me for the back issues.

Isadore Heir,
503 Jackson Avenue,
Jersey City, N. J.

(The old stories which do not appeal to you, in many cases are better than the new. At any rate there is no living Edgar A. Poe, and Jules Verne has gone to his rest, but their stories survive them and will for many generations.—EDITOR.)

A Letter from Neil R. Jones

Editor, AMAZING STORIES:

It gives me a great deal of pleasure to know that Professor Jameson has been taken into the hearts of so many readers, and I wish to thank them for their kindly commendations.

I regret that certain features of "Into the Hydrosphere" were misunderstood by a reader who voices his suit in the February issue. I I feel that I am at fault in that my explanations were not sufficiently lucid, leaving, apparently, too much to the imagination; too much to be taken for granted. Perhaps I should have called time out to have been more exacting, at the expense of sustained interest. Stories of space ships no longer cite the irrelevant detail that the floors of the ships contain a gravitational substance. The case-hardened science fiction reader knows this to be a fact just as soon as he finds that the occupants of the ship do not float about in it.

This privilege I may have stretched a point or two, assuming that all minds would follow, that readers would realize that the Uchke applied this same gravitational substance to their inner world and to their island of light, just as they did to the floors of their space ships. This explains quite obviously why the Uchke, Plekne and Zoromes found no difficulty in walking about the inner world. Let me add, however, that this artificial gravity did not extend its field very far from the inner crust and would have no effect upon the island of light. That is another angle.

Ironic allusion is cast upon the professor's cleverness. Cleverness is relative, depending on what standard you assume. I would hardly call the professor clever. Professor Jameson has made several hazardous, yet foolish, moves. His impulsive entrance into the Tripeds' transition cube is most outstanding proof of this.

It would really be a lot better if critics refrained from misquoting. In the Discussions, I find that my word "hurtle" has strangely evolutionized into "accelerate." The dictionary says of the word HURTLE, "impel forcibly—dash in collision." That is exactly what would have happened if the Uchke bombardment had been a little bit stronger and had been directed from one portion of the mainland alone instead of from all directions. The island of light would have been forced rapidly through the zero intensity of gravity, or lack of gravity, acting much like a space ship from which there had been a rocket release, or much closer to similarity, a space ship struck by another moving body.

The dictionary says of ACCELERATE, "to hasten—to cause to progress faster." Beyond the initial push, there would have been no acceleration, for, as forementioned, the artificial gravity of the mainland possessed no attraction beyond the tops of the tallest buildings, and that is too short a distance to gain appreciable momentum. In short, there is no claim in the story about the island's possibilities of picking up acceleration. No reason exists for worrying the linotyper with integral signs and exponents, nor the patient readers, either, with mathematical proof of something which has not been contradicted.

It is quite true that the inner world was but an insignificant comparison to the great, monstrous bulk of the surrounding hydrosphere, something like a hollow buckshot inside of a solid basketball, and it is probable that a zero intensity of gravity did exist there; that is, outside the influence of the Uchke's artificial gravity. But, however, a great hollow globe such as Edgar Rice Burroughs conceived in his "Moon Maid," I believe, is quite another matter. Zero intensity would exist, in this case, only near the common center of the immense hollow. The objects on the inner surface would adhere to where they stood rather than feeling the same gravitational pull from the other side of the hollow moon (assuming for sake of argument that it is hollow) when that other side is removed more than a thousand miles distant, and after all is but a comparatively thin crust of material. If such attractions were equal, regardless of proximity, Venus could easily pull us off the earth and hold us suspended halfway between that planet and ours. Drag out your exponents and integral signs if you will, but hearken, son of man, great mathematical minds proved conclusively long ago that airplanes could not fly. Practical experiment knocked these painstaking figures for a loop.

If you wish to contradict these feasibilities stressed in "The Moon Maid," nothing less will be acceptable than practical experiment, tangible proof off paper, free of theory. To conduct such an experiment, you must free yourself from the earth's gravity so that you will have your gravitational zero intensity in which to place your experimental objects, or you might invent a gravitational nullifier. In the meanwhile, my theory is just as good as yours. I shall continue to believe mine; you, probably yours.

Coincidentally, in the earlier phases of the same letter, reference is made to the editorial disbelief in flights of the moon. This may occur much sooner than we anticipate. Compared to the scientific strides the world has made in the past fifty years, I should place the realization of interplanetary flight no later than the twenty-third century, colonization of Venus and Mars, if they prove habitable or conducive to synthetic introduction of neces-

sary sustenance to earthly life, by the twenty-fourth century. By the twenty-sixth century, all three worlds may be equally populated and developed (Venus, Earth, Mars), outposts situated on the moons of Jupiter and Saturn, possibly. It is with this belief, barring a world upheaval or catastrophe, that I have written two current series of nevelettes and short stories under the collective titles of "Tales of the 24th Century" and "Tales of the 26th Century." "The Moon Pirates," one of the latter series, will appear soon in this magazine.

NEIL R. JONES.

Bob Olsen's Ant Stories Commended

Editor, AMAZING STORIES:

I'd like to second the suggestion of P. S. Miller on the "Skylark" series. He suggests putting them in the Quarterly complete. I think that is the most sensible suggestion yet. I'm not in favor of reprints, but if you must print them, keep them out of the monthly.

Bob Olsen's story is one of the best stories on ants that I've had the pleasure of reading. If I am not mistaken, he wrote another story about ants, "The Ant With a Human Soul." However, the new one is the better of the two.

The two serials read as though they will lead up to a swell ending.

To be short, the other stories were excellent.

Edgar Allan Poe's stories were probably masterpieces a number of years ago, but compared to Williamson, Olsen and C. A. Smith, they are second rate, and as far as I am concerned, they take up room that could be used for a more modern story.

By the way, Morey's cover on the March issue is swell.

OLON F. WIGGINS,
2418 Stout Street,
Denver, Colorado.

(We have had several good ant stories and one feature of them is that they are far from monotonous and do not follow in each other's tracks. There is a high degree of individuality in each of them. Poe needs no defense, his stories are absolute classics. You would be surprised if you would take in the subject matter of the early issues of AMAZING STORIES and would see the number of reprints which were then employed. Poe's stories are beyond criticism and are second rate to the works of no writer that we have ever had. We believe that no one would be more ready to agree with this statement than the authors whom you have named towards the end of your letter. We are glad that you like Morey's work. It not only is good but he takes a warm personal interest in it and the criticisms indicate that he is doing better work all the time. There is no room in the Discussions for all the letters we receive, so when anything is said in these columns about the opinions of readers, we have more than the published letters.—EDITOR.)

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